From: Howard, Leslie Ann CIV USN BRAC PMO SAN CA (USA) [leslie.howard@navy.mil]
Sent: Wednesday, April 8, 2020 2:48 PM
To: Stoick, Paul T CIV USN (USA) [paul.stoick@navy.mil]
Subject: FW: US EPA Comments Draft RACR Parcel E-2 Phase II
Attachments: RTC - D_RACR_ParcelE-2.docx; 500506-B24-Fig 6.pdf; NEW_500506-B25 Fig 7.pdf; 500506-B26 Fig 8.pdf; Table 1_FW_Conf Table.xlsx; Table 2_FW_Lead Excavation Conf Table.xlsx; Table 3_TW Chemical Analysis Results_RC.xlsx; App F_Parcel E-2 Well Construction Table.xlsx

Hi Paul

It's been 8 days since we rec'd the comments from Aptim. I sent my comments to them. I will check with Carl tomorrow, but I'm honestly afraid of his response. Not sure he has continued any type of a review after our RACR discussion.

Will you have any time to review? If not, that's ok, just thought I would ask. Aptim is almost finished with the DF redlined document.

Thanks

Leslie

From: Howard, Leslie Ann CIV USN BRAC PMO SAN CA (USA)
Sent: Tuesday, March 31, 2020 12:15 PM
To: Stoick, Paul T CIV USN (USA) <paul.stoick@navy.mil>
Subject: FW: US EPA Comments Draft RACR Parcel E-2 Phase II

Hi Paul

I haven't reviewed all of these yet, but will let you know if I need your help on drafting some of the RTCs. Carl is reviewing them as well.

Nels said they can prepare a redlined document for submittal as well, Yeah!!!

Thanks
Leslie

From: Johnson, Nels <Nels.Johnson@aptim.com>
Sent: Monday, March 30, 2020 5:42 PM
To: Howard, Leslie Ann CIV USN BRAC PMO SAN CA (USA) <leslie.howard@navy.mil>
Cc: Ayala, Mike <Mike.Ayala@aptim.com>
Subject: [Non-DoD Source] RE: US EPA Comments Draft RACR Parcel E-2 Phase II

Leslie,
Attached is the draft RTC document for the subject document for Navy review.

In addition, we have included several updated figures and tables for Navy reference.

Please note there a few responses that have been highlighted in turquoise. These responses require Navy attention or APTIM is waiting on a response from our subcontractor.

Let me know if you have any questions.

I received your email regarding redline/strikeout version of text. We will look into this while the Navy is reviewing the RTC Package.

Thanks, Nels

From: Howard, Leslie Ann CIV USN BRAC PMO SAN CA (USA) <leslie.howard@navy.mil>
Sent: Monday, March 16, 2020 10:02 AM
To: Johnson, Nels <Nels.Johnson@aptim.com>
Subject: RE: US EPA Comments Draft RACR Parcel E-2 Phase II

Well, Karen works for EPA, not for, or with CDPH. Nina is the liaison with CDPH. She told us NO COMMENTS and in writing. Just reference Nina's letter to address Karen's comment.

Thanks!
Leslie

From: Johnson, Nels <Nels.Johnson@aptim.com>
Sent: Monday, March 16, 2020 9:57 AM
To: Howard, Leslie Ann CIV USN BRAC PMO SAN CA (USA) <leslie.howard@navy.mil>
Subject: [Non-DoD Source] RE: US EPA Comments Draft RACR Parcel E-2 Phase II

Hi Leslie,
Can you also weigh in on USEPA comment #18 from Karen Ueno:

- Additional comments on the rad portions of the RACR may be forthcoming, as appropriate

Thanks, Nels

From: Howard, Leslie Ann CIV USN BRAC PMO SAN CA (USA) <leslie.howard@navy.mil>
Sent: Monday, March 9, 2020 8:28 AM
To: Johnson, Nels <Nels.Johnson@aptim.com>
Subject: RE: US EPA Comments Draft RACR Parcel E-2 Phase II

Thanks Nels...I haven't had a chance to look at all of them, just wanted to make sure I sent them off right away.

Leslie

From: Johnson, Nels <Nels.Johnson@aptim.com>
Sent: Monday, March 9, 2020 8:27 AM

To: Howard, Leslie Ann CIV USN BRAC PMO SAN CA (USA) <leslie.howard@navy.mil>
Subject: [Non-DoD Source] RE: US EPA Comments Draft RACR Parcel E-2 Phase II

Just a quick note to say we have received 4 e-mails containing agency comments. We are compiling them now. I will let you know if there are any concerns.

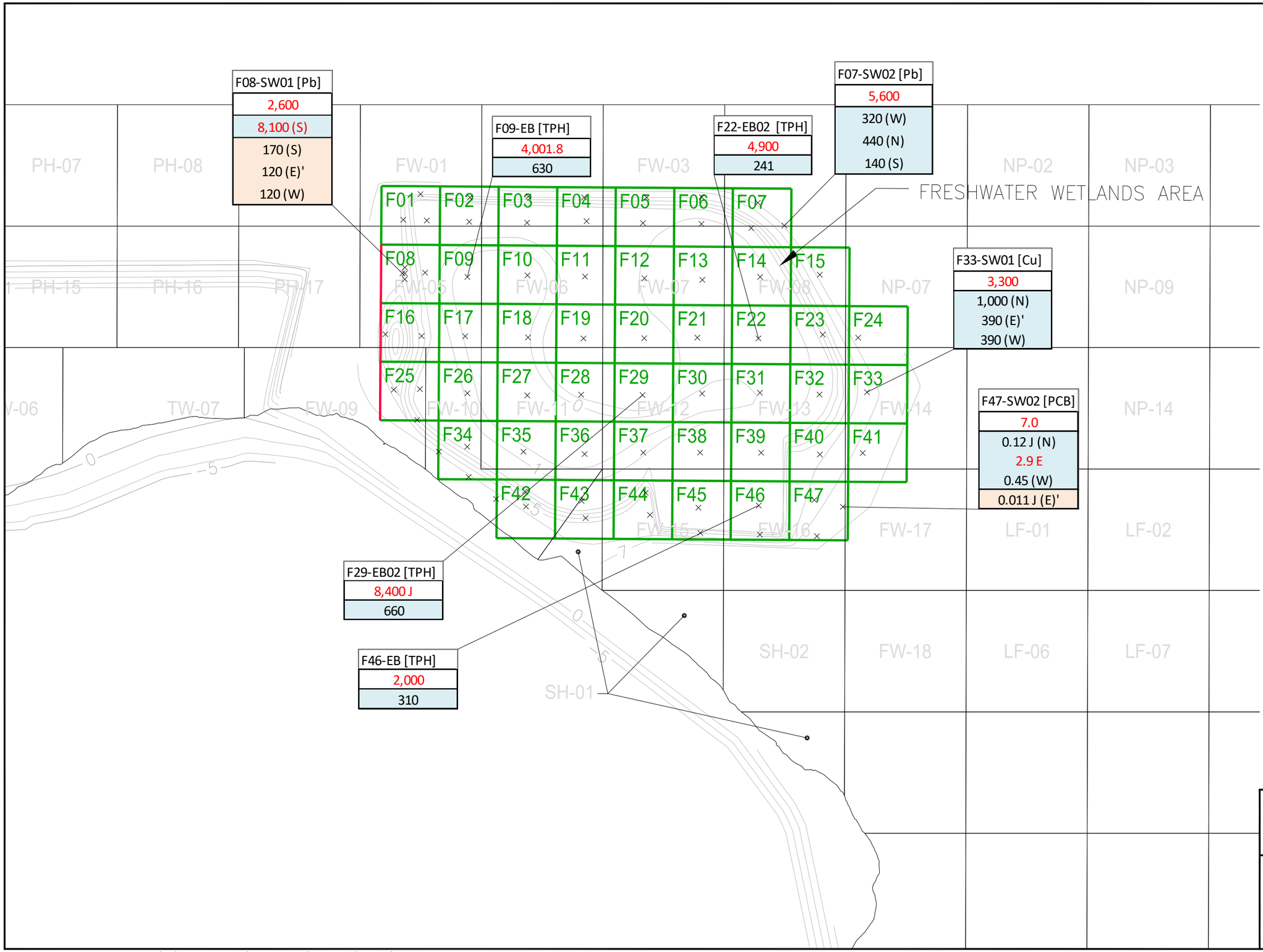
Thanks, Nels

From: Howard, Leslie Ann CIV USN BRAC PMO SAN CA (USA) <leslie.howard@navy.mil>
Sent: Sunday, March 8, 2020 9:45 AM
To: Johnson, Nels <Nels.Johnson@aptim.com>
Subject: FW: US EPA Comments Draft RACR Parcel E-2 Phase II

From: Ueno, Karen <Ueno.Karen@epa.gov>
Sent: Friday, March 6, 2020 6:45 PM
To: Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1@navy.mil>; Howard, Leslie Ann CIV USN BRAC PMO SAN CA (USA) <leslie.howard@navy.mil>; Stoick, Paul T CIV USN (USA) <paul.stoick@navy.mil>
Cc: juanita.bacey@dtsc.ca.gov; tina.low@waterboards.ca.gov; Boruck, Jennifer@DTSC <Jennifer.Boruck@dtsc.ca.gov>; Amy Brownell <amy.brownell@sfdph.org>; 'jeff.white@waterboards.ca.gov' <jeff.white@waterboards.ca.gov>
Subject: [Non-DoD Source] US EPA Comments Draft RACR Parcel E-2 Phase II

Hi Derek, Leslie, and Paul,

Please see attached. Thank you.



LEGEND

- RADIOLOGICAL SURVEY UNIT
- 50 FT. X 50 FT. SAMPLING GRID
- × CONFIRMATION SAMPLE LOCATION - MEETS PROJECT ACTION LIMITS
- SEE FIGURE 8 FOR ADDITIONAL INFORMATION
- = Over-excavation #1
- = Over-excavation #2
- = Over-excavation #3

NOTES:
1. ALL CONCENTRATIONS ARE IN mg/kg.
2. TIER 2 CHEMICAL HOT SPOT GOAL FOR LEAD = 1,970 mg/kg.

SCALE
0 80 160 FEET

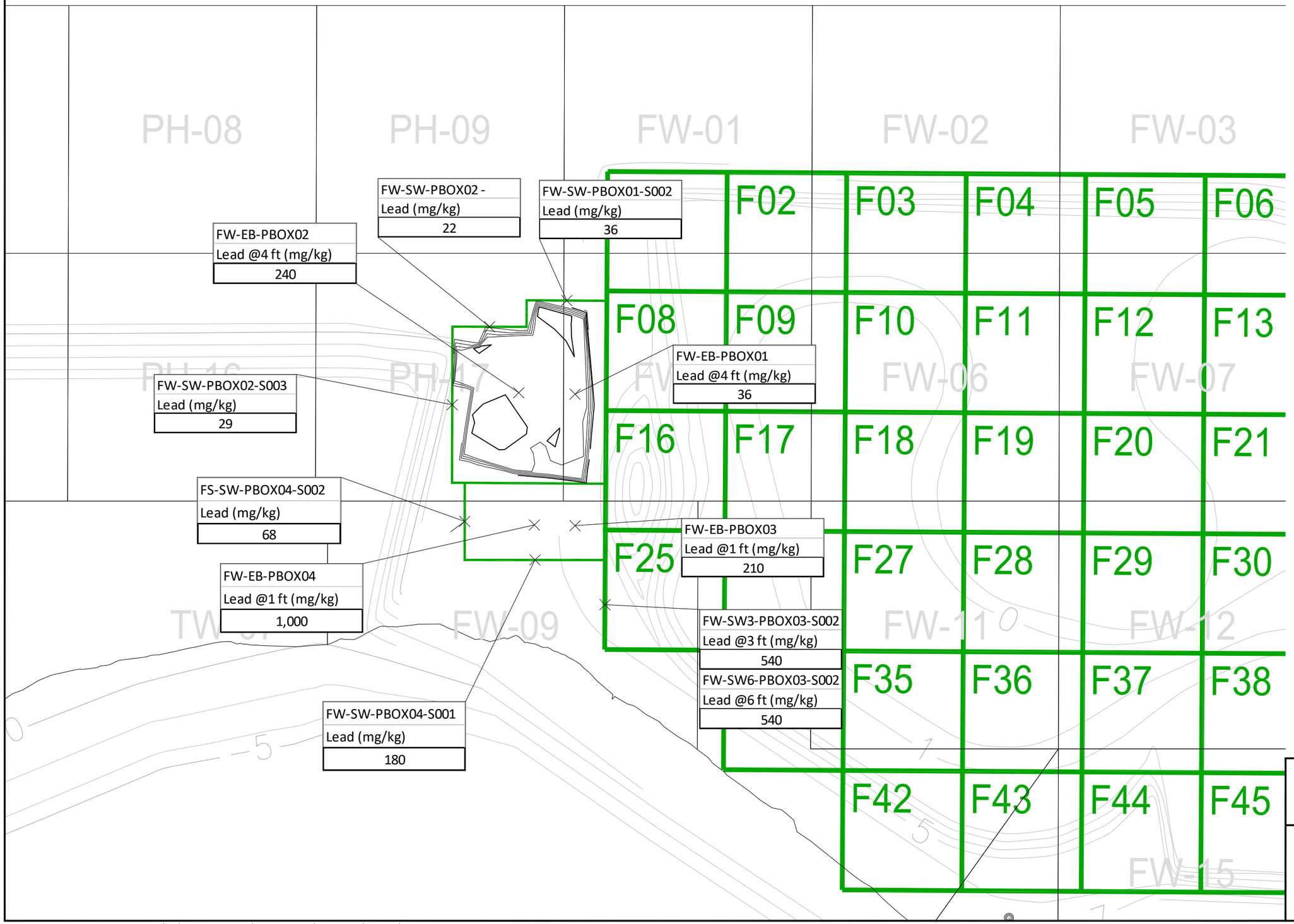
U.S. Department of the Navy
BRAC PMO West
San Diego, California

FIGURE 6
FRESHWATER WETLAND FINAL CHEMICAL CONFIRMATION SAMPLE GRIDS

REMEDIAL ACTION COMPLETION REPORT
PARCEL E2
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA

500506-B24

File: S:\CAD\Hunters Point RADMAC\500506 Revetment\Phase 2 RACR\AS-BUILTS\500506-B24.dwg User: Mike.Ayala Mar 29, 2020 - 5:46pm
XREF Files: IMAGE Files:



LEGEND

- RADIOLOGICAL SURVEY UNIT
- 50 FT. X 50 FT. SAMPLING GRID
- BOUNDING CONFIRMATION SAMPLE LOCATION MEETS PROJECT ACTION LIMITS
- 10 — FINAL AS-BUILT LEAD OVER-EXCAVATION

NOTES:
1. ALL CONCENTRATIONS ARE IN mg/kg.
2. TIER 2 CHEMICAL HOT SPOT GOAL FOR LEAD = 1,970 mg/kg.

SCALE
0 40 80 FEET

U.S. Department of the Navy
BRAC PMO West
San Diego, California

FIGURE 8
FRESHWATER WETLAND FINAL LEAD EXCAVATION FINAL CHEMICAL CONFIRMATION SAMPLE GRIDS

REMEDIAL ACTION COMPLETION REPORT
PARCEL E2
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA

500506-B26

File: S:\CAD\Hunters Point RADMAC\500506 Revetment\Phase 2 RACR\AS-BUILTS\500506-B26.dwg User: Mike.Ayala Mar 30, 2020 - 9:02am
XREF Files: Lead Dig IMAGE Files:

Well Identification	Northing[1] (NAD 27)	Easting[1] (NAD 27)	TOC Elevation[1] (feet above msl)	Borehole Diameter (inch)	Casing Material	Casing Diameter (inch)
NPZO1A	-	-	-	10	Schedule 40 PVC	4
NPZO2A	-	-	-	10	Schedule 40 PVC	4
NPZO3A	-	-	-	10	Schedule 80 PVC	4
NPZO4A	-	-	-	10	Schedule 80 PVC	4
NMW02A	-	-	-	10	Schedule 40 PVC	4
NMW03A	-	-	-	10	Schedule 40 PVC	4
NMW09A	-	-	-	10	Schedule 40 PVC	4
EX WELL - 001	-	-	-	10	Schedule 80 PVC	6
EX WELL - 002	-	-	-	10	Schedule 80 PVC	6
EX WELL - 003	-	-	-	10	Schedule 80 PVC	6
EX WELL - 004	-	-	-	10	Schedule 80 PVC	6
EX WELL - 005	-	-	-	10	Schedule 80 PVC	6
EX WELL - 006	-	-	-	10	Schedule 80 PVC	6
EX WELL - 007	-	-	-	10	Schedule 80 PVC	6
EX WELL - 008	-	-	-	10	Schedule 80 PVC	6
EX WELL - 009	-	-	-	10	Schedule 80 PVC	6
EX WELL - 010	-	-	-	10	Schedule 80 PVC	6
EX WELL - 011	-	-	-	10	Schedule 80 PVC	6
EX WELL - 012	-	-	-	10	Schedule 80 PVC	6
EX WELL - 013	-	-	-	10	Schedule 80 PVC	6

Notes:

[1] = Final topographical survey information to be collected by follow-on contractor after installing well completions.

[2] = Screen and total depths collected from ground surface at the time of installation.

Screen slot size (inch)	Top of Screen[2] (feet bgs)	Bottom of Screen[2] (feet bgs)	Total Depth[2] (feet bgs)
0.010	12	17	18
0.010	9	14	15
0.020	8	13	14
0.020	8	18	19
0.010	8	18	20
0.010	9	19	20
0.010	9	19	20
0.020	8	13	14
0.020	8	13	14
0.020	8	13	14
0.020	8	13	14
0.020	8	13	14
0.020	8	13	14
0.020	8	13	14
0.020	15	20	21
0.020	16	21	22
0.020	12	17	18
0.020	7	12	13
0.020	9	14	15
0.020	9	14	15
0.020	11	16	17

LEGEND

- RADIOLOGICAL SURVEY UNIT
- 50 FT. X 50 FT. SAMPLING GRID
- × CONFIRMATION SAMPLE LOCATION - MEETS PROJECT ACTION LIMITS
- = Over-excavation #1

NOTES:
1. ALL CONCENTRATIONS ARE IN mg/kg.
2. TIER 2 CHEMICAL HOT SPOT GOAL FOR LEAD = 1,970 mg/kg.

SCALE
0 80 160 FEET

U.S. Department of the Navy
BRAC PMO West
San Diego, California

FIGURE 7
TIDAL WETLAND FINAL CHEMICAL CONFIRMATION SAMPLE GRIDS

REMEDIAL ACTION COMPLETION REPORT
PARCEL E2
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA

500506-B25

File: S:\CAD\Hunters Point RADMAC\500506 Revetment\Phase 2 RACR\AS-BUILTS\500506-B25.dwg User: Mike.Ayala Mar 30, 2020 - 5:24pm
XREF Files: MAST_DSGN
HP_Map
Site Wells IMAGE Files: CBI_Logo-Color-RGB.jpg

Response to Comments on the *Draft Remedial Action Completion Report, Parcel E-2 Phase II, Hunters Point Na California, December 2019, DCN: APTM-2005-0013-0047*	
Comments by: Nina Bacey, California Department of Toxic Substances Control, comments dated March 5, 2020	
Comment	**Respons**
1. Section 3.3.2.2, Excavation of Offshore Soil and Sediment from Parcel F – This section refers to as-build Drawing C2 in Appendix C. Drawing C2 is not complete. A portion of the Panhandle Area appears to be missing. Please include the excavated cut to the tidal wetlands area in the drawing.	As described in Section 3.3.1 of the Desig removal of offshore sediment within 6 fe structure was required to ensure its integr activities in Parcel F. As-built Drawing C correctly depicts the limits of the complet does end prior to transitioning into the tid "wedge" of sediment cut from Parcel F (c ends at the same location. No changes to as-built Drawing C2 are re
2. Section 3.2.10 Site Grading to Final Subgrade – Please indicate in this Section how many Low-Level Radiological Objects (LLROs) were identified and removed during the site grading (17?).	Section 3.2.10 has been revised to indicat and removed during the site grading. A n into this section to state; "18 LLRO's we this surface screening process."
3. Section 3.2.13 Construction of Foundation Soil Layer – a. Please indicate in this section if the soil that was used for the foundation soil layer was screened for Chemicals of Concern (COCs) in addition to Radionuclides of Concern (ROCs). b. Please indicate in this section if the foundation layer was installed within the freshwater pond and wetland area. c. Clarification is needed for the last paragraph, #1. Is the section of shoreline between the landfill and the geogrid anchor depicted in Drawing C3? d. Is the geogrid anchor the temporary soil anchor as depicted on Drawing C3? Please indicate where the design elevations have not yet been met for the three areas specified.	a. All material generated on site during ex was analyzed for ROCs, while additional only required 1) within the design wetlan not be covered with a protective liner, an within the DER to remove additional hot analytical data and validation reports. All import sources used to complete the f analyzed for both site COCs and former p which can be found in Appendix W. b. For clarity, the following paragraph wi "To construct the foundation layer within area, approximately 4,620 cy of clean fill Brisbane CA was imported to the site as t with DBR design drawing C19 (ERRG, 2 areas was placed utilizing grade staking n foot above the constructed subgrade surfa C5 (Appendix C). The sampling and analy CB&I, 2016) provides analytical requirem import verifications. The approved impor was presented to the Navy under Constr P)." c. As-built Drawing C8 depicts the found with a color scheme representation of the 3.2.13. A citation will be added to this se readers attention to the correct figure. d. Correct. The approximate 2-foot thick directly over the geogrid layer serves as a layer in place during construction of the s was constructed to the design elevation as in Section 3.2.13, a small section of shore the geogrid anchor point did not meet the noted above, please see as-built Drawing area.
4. Section 3.2.15 Installation of Monitoring and Extraction Wells and Piezometers – Indicates in paragraph six that, *"To properly anchor the*	a. The compacted soil layer placed above placement criteria as all other compacted

Response to Comments on the *Draft Remedial Action Completion Report, Parcel E-2 Phase II, Hunters Point Na California, December 2019, DCN: APTM-2005-0013-0047*	
Comments by: Nina Bacey, California Department of Toxic Substances Control, comments dated March 5, 2020	
previously installed geogrid, the Navy required fill material to be placed over the entire upland footprint of geogrid to the finished grade of the final cover. Per the DBR, it is understood that this material is only intended to be temporary and will be removed during Phase III of the RA to allow for installation of the final protective liners." Clarification is needed regarding this temporary material. a. Was it screened for COCs in addition to ROCs and if so, why does it need to be removed prior to installing the final layer of material? b. Please indicate in this section the depth of this material.	referred to as a "temporary layer" becaus final landfill cover system (HDPE geome etc.) will need to remove this material to inches above the in-place geogrid in orde system to the seawall foundation as speci b. The depth of this material varies as the from the completed seawall to the upland geogrid was installed at a consistent eleva msl. Therefore, it is anticipated the next p out this soil layer down to a depth of appr a minimum 6" soil layer between the geo will be tasked with installing.
5. Section 3.4.1 Soil and Debris – It's unclear how much soil was not cleared chemically and disposed of as hazardous waste and where that waste was transported to. Though Section 7.1 does reference some material disposal. Please clarify.	For clarity, additional language has been describe the final disposition of soil and c addition, the following paragraph has bee Section3.4.1: "A detailed summary of all material trans presented in Appendix X, which in summ tons of Resource Conservation and Recov approximately 62.43 tons of non-hazardo non-hazardous soil; and 98,380 pounds o
6. Section 4.7 Radiological Screening of Excavated Soil – Indicates *"… 22 of the 42 LLROs were identified and removed during screening of the soil on the RSY pads."* Please explain what happened to the other 20 LLROs?	Section 4.7 only discusses the radiologica took place on RSY pads. Of the 42 total L project, 22 of them were found on the RS 20 LLROs that were identified during the 4.4 (17 LLROs during radiological survey 3.2.12 (3 LLROs during waste consolidat changes were made to the text.
7. Section 7.0 Conclusions and Ongoing Activities – Indicates that the Parcel E-2 remedial action will consist of three phases. If this has been recently changed to four phases, please indicate that here (first paragraph and in Section 7.2).	As described in Section 1.0, the Parcel E- in phases due to the large scope of requir DBR (ERRG, 2014). Specifically, Sectio list the RA construction activities to be co APTIM is not aware of the Navy's plans therefore any interpretation of follow on come from the direction of the Navy's RI text are recommended at this point in tim
8. Section 7.1 Conclusions – This last bullet indicates 42 LLROs were identified and recovered during the remediation. The text of the report indicates 17 were removed during the final radiological characterization surface survey and 22 removed during the RSY pad soil screening. Please indicate in the text of the report where the other 3 LLROs were located and how handled.	Section 3.2.12 ("On-site Consolidation of Sediment, and Debris"), the fourth paragr LLROs that were identified and removed survey activities.
9. Appendix B Figure C13 – It is difficult to see the hatched area as indicated in the Note. Please revise and/or label to clarify this area of concern.	Figure C13 (Appendix B) has been revise various hatching patterns used.
10. Appendix C – as-build Drawing C2 – In the legend, the nearshore slurry wall and the site boundary are identified with a similar broken line. DTSC recommends changing one so that it is clear where the slurry is located.	Drawing C2 (Appendix C) has been revis separate line types.
11. Appendix Y – Water Quality Monitoring Data – This appendix appears to be missing the general water quality data and monitoring logs as indicated in Section 3.1.8. Please include.	The Water Quality Monitoring Data logs

Response to Comments on the *Draft Remedial Action Completion Report, Parcel E-2 Phase II, Hunters Point Na California, December 2019, DCN: APTM-2005-0013-0047*	
Comments by: Marikka Hughes, California Department of Toxic Substances Control, Geological Services Unit, comments da	
Comment	**Respons**
1. Section 3.2.1 Shoreline Revetment This section states that details of the shoreline revetment construction are described in the "following subsections," but there are no subsections associated with Section 3.2.1 and the remaining sections in Section 3.2 also refer to the installation of the upland slurry wall and wells and piezometers. It is believed that the statement in Section 3.2.1 is meant to refer to Sections 3.2.2 through 3.2.13. Please review the document and revise as appropriate.	This section has been revised to read as fo "The shoreline revetment was constructed Plan (CB&I, 2016) and as described in Se
2. Section 3.2.10.1 Excavation to Construct Future Wetlands The RACR discusses that confirmation samples were collected and exceeded in some of the sample grid locations, but the data are not presented in a table nor is a figure provided where these samples were collected. Please provide a table in the RACR that includes the confirmation sample data and also provide a figure that indicates where the confirmation samples were collected.	The Tidal and Freshwater Wetlands confi presented in Appendix X. However, for b revised to move the discussion, tables and Wetland and Freshwater Wetland confirm main text.
3. Section 3.2.12 On-site Consolidation of Radiologically-Cleared Soil, Sediment, and Debris The text indicates that the materials generated at the site for this remedial action exceeded the volume planned in the *Final Design Basis Report, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California* (ERRG, 2014) and a reference to the changes made to the site plan are presented in Appendix C. As the figures provided in the main portion of the RACR include what the pre-existing conditions were at the site, please provide a figure of the site with the different areas post-construction labeled in the main portion of the RACR.	For continuity, a version of the Foundatio [Appendix C]) will be copied forward to Figure 9.
4. Section 3.2.14.5 Excavation and Installation and Section 4.2 Upland Slurry Wall and French Drain Section 3.2.14.5 indicates that an obstruction was noted during the excavation to install the slurry wall, and later in Section 4.2, it is stated that the obstruction is believed to be serpentinite rock. Please provide any photographs of the obstruction available and references to the documents used to determine that this obstruction is likely bedrock.	There are no photographs available of the cement-bentonite slurry used to maintain "open" condition was always required to working surface. Reference to the historic a geologic obstruction (Navy, 1958) was paragraph of Section 4.2.
5. Section 3.2.15 Installation of Monitoring and Extraction Wells and Piezometers a. The third paragraph indicates the monitoring wells were installed with a transition seal of bentonite chips, but based on the boring logs included in Appendix F, a bentonite seal was not placed in any of the wells. Please evaluate and revise the RACR as needed. b. In the last sentence of the third paragraph, the text states that "the wells were grouted from the top of the bentonite seal to the ground surface." Please revise this sentence to state that the well annular space was grouted. c. The only figure included with the well locations is provided in Appendix C. It is recommended that a figure showing the locations of the new wells and piezometers is included in the main body of the RACR. d. The RACR indicates that the wells and piezometers were not completed with a surface completion to protect the well, but there is no indication of how the wells are currently completed at the surface and how these locations are being protected while additional work needs to be	a. The Draft boring logs for the mon Appendix F have been updated to seal of bentonite chips. b. The sentence was revised as follo wells was grouted from the top o surface." c. For continuity, a version of the F (Drawing C6 [Appendix C]) will portion of the RACR as Figure 9. present the new upgradient well n d. As well completions are to be fin contractor, the wells were genera sticking up above ground surface the opening. A cone or similar de left at each well location to increa contact with any potential vehicle

Response to Comments on the *Draft Remedial Action Completion Report, Parcel E-2 Phase II, Hunters Point Na California, December 2019, DCN: APTM-2005-0013-0047*	
Comments by: Marikka Hughes, California Department of Toxic Substances Control, Geological Services Unit, comments da	
completed at the site. Please revise the RACR to indicate what condition the wells were left in and what measures have been taken to protect the wells. e. The text does not indicate when the new wells will be developed and samples. Please revise the RACR to state when well development and well sampling will occur.	e. In accordance with the approved three new monitoring wells were their installation. (Appendix X in water characterization.) Well sam upgradient well network will be t contractor.
6. Section 3.4.1 Soil and Debris This section discusses the wastes that were generated, but does not provide details on how much material was disposed of off-site or placed in the waste consolidation area at the site. Please revise the RACR to include details on where the wastes went and what volumes were disposed of off-site and on-site in one section of the text.	For clarity, additional language has been describe the final disposition of soil and d addition, the following paragraph has bee Section3.4.1: "A detailed summary of all material trans presented in Appendix X, which in summ tons of Resource Conservation and Recov approximately 62.43 tons of non-hazardo non-hazardous soil; and 98,380 pounds o
7. Section 3.9 Decontamination and Release of Equipment and Tools This section does not provide a discussion of how the drilling rig and downhole equipment were decontaminated. Please revise to state what decontamination measures occurred during the installation of the wells and piezometers.	Additional text has been added to Section and Extraction Wells and Piezometers.
8. Appendix F Monitoring Well Network (Logs and Data) a. It is recommended that a table providing the well construction data for the wells and piezometers installed be provided in the RACR. b. The well construction diagrams on all boring logs except for EX WELL-001 do not provide details regarding the two uppermost materials placed in the annular space. Please revise the diagrams to identify what materials were used in the construction of these wells and piezometers. c. On the boring log for EX WELL-001, there is a backfill material indicated beneath the well construction materials. Please revise the log to indicate what this material is.	a. A summary table providing the w and piezometers installed has bee Appendix F. b. The draft boring logs have been u construction materials for all wel within Appendix F. c. The subject boring log has been u construction materials.

Response to Comments on the *Draft Remedial Action Completion Report, Parcel E-2 Phase II, Hunters Point Na California, December 2019, DCN: APTM-2005-0013-0047*	
Comments by: Jesse Negherbon, California Department of Toxic Substances Control, Engineering and Special Project Office	
Comment	**Respons**
1. Section 3.2.9 Perimeter Channel Outlet. The fifth sentence states that bedding material consisting of sand with a maximum particle size of two inches was used during final grade restoration where the outfall pipe passed through the nearshore slurry wall cap. However, we note that the described two-inch material would classify as gravel and that the maximum sand particle size per the Unified Soil Classification System (USCS) is 4.75 millimeter. The text should be revised to include the correct description of the bedding material used and the relevant construction specification should be cited.	For clarity, the noted statement has been "Where the outfall pipe passed through bedding material consisting of silty, clay Pile [Appendix M]) was used during resto
2. Section 3.2.14.5 Excavation and Installation The first sentence in the seventh paragraph states that approximately 760 cubic yards (cy) of soil and debris was excavated during the upland slurry wall construction. It is not clear if these are bank or excavated cubic yards, and if the slurry wall cap excavation materials are included. Based on the described slurry wall configuration, our calculations indicate a total bank cubic yardage of more than 100 cy above the reported number. The volume of excavated soil and debris should be reviewed and revised, if necessary, to conform to the slurry wall configuration.	The excavated volume of material remov upland slurry wall has been confirmed as yards. This volume does not include mate trench cover which, as described in the pa the entire alignment of the trench and tem
3. Section 4.2 Upland Slurry Wall and French Drain The second sentence in the third paragraph states that information collected during installation of the slurry wall together with a historical record search indicates that the obstruction encountered at a depth of about ten feet along an approximate 200-foot section of the slurry wall alignment is geologic rather than man-made. The sentence further states that Aptim recommends leaving the slurry wall as constructed without further alterations to the target depth. However, we note that the text does not discuss the field data and nature of any samples obtained to support the geologic nature of the obstruction or how the requirement to key in the slurry wall into the underlying bay mud was met. The text should be revised to include a discussion of the field sampling data/information and the effect of terminating the slurry wall on top of/within the obstruction and whether/how this termination meets the approved design.	As designed, the upland slurry wall is con because it was not intended to key into an the underlying bay mud layer was only a slurry wall which was installed by a previ discussed within the final DBR, some gro upland slurry wall, but groundwater mode F; ERRG. 2014) indicate that upgradient around the upland slurry wall or diverted French drain (Section 3.2.14.7) installed upland slurry wall.
4. Table 3 Waste-Consolidation Comparison Criteria The comparison criteria value for lead is shown as 19,700 milligrams per kilogram. However, this value is ten times that shown in Table 1 Hot Spot Goals for Soil and Sediment. This value should be reviewed for accuracy and revised accordingly.	Table 3 of the Draft RACR does indeed c Goal for lead should read 1,970 (mg/kg). revised for accuracy during the Final RA Please note that while this table does con 1,970 mg/kg was used during the lead soi Appendix X.
5. Appendix C Construction As-Built Drawings. Drawing C2 Shoreline Revetment Finish Grading As-Build The nearshore slurry wall shown on the drawing is on the order of 1200 feet long. However the nearshore slurry wall described in the report text is indicated to be on the order of 571 feet. In addition, the drawing does not show all the existing features, specifically Drawing C1 Pre-Existing Site Conditions shows at least three pre-existing monitoring wells that are proximal to the alignment of the nearshore slurry wall and which are not shown in Drawing C2. In addition, Drawing C2 shows 13 extraction wells which are not shown in Drawing C1, and are not discussed in the report. The	As stated in the first paragraph of Section The ROD (Navy, 2012) specifies that gro controlled through the installation of two nearshore slurry wall (installed by the Pha upland slurry wall constructed under this slurry wall installation within this RACR 'upland' wall, which extends approximat parcel boundary to the southern extent of portion of Parcel E-2.

Response to Comments on the *Draft Remedial Action Completion Report, Parcel E-2 Phase II, Hunters Point Na California, December 2019, DCN: APTM-2005-0013-0047*	
Comments by: Jesse Negherbon, California Department of Toxic Substances Control, Engineering and Special Project Office	
drawings and report should be reviewed for consistency and revised accordingly.	The as-built location of the nearshore slur on Drawing C1, Pre-Existing Conditions, monitoring well network as it existed prio Drawing C2 shows the as-built installatio newly installed upgradient well network (the installation of 4 piezometers, 3 monito monitoring/extraction wells.
6. Appendix C Construction As-Built Drawings. Drawing C6 Foundation Grading As-Built The contours shown on this drawing differ from those shown on Drawing C2 Shoreline Revetment Finish Grading As-Built. The text report states that Phase II remedial action completion left finished grades as foundation layer grades. The drawings should be reviewed and revised to remove the discrepancies.	As-built Drawing C2 was only intended t the shoreline, while as-built Drawing C6 conditions of the foundation grade. Howe contours shown on as-built Drawing C2 h foundation grade as suggested within the
7. Appendix C Construction As-Built Drawings. Drawing C7 Upland Slurry Wall and French Drain As-Built. The Profile View Alignment – (Upland Slurry Wall) shows a bottom slurry wall elevation of about – 10.00 feet with an approximate 200-foot section with a bottom elevation of elevation 0.00 feet. Note 1 associated with the profile states that the Bay mud for the section is noncontiguous and not considered an aquitard. However, we note that the third sentence in the second paragraph in Section 3.7.2.2 Wall Depths of the August 2014 Final Design Basis Report, Parcel E-2 states that the bottom elevation of the nearshore slurry wall varies between -6 and -20 feet below msl based on the location of the underlying Bay Mud aquitard, stated in the first sentence of the same paragraph. The as-built condition appears to be a deviation from the Design Basis Report (DBR), and it is not clear if the Bay Mud aquitard was engaged. The as-built condition should be evaluated against the DBR and the implications of not engaging the underlying Bay Mud should be evaluated, in relation to the effectiveness of the nearshore slurry wall, and the conclusion(s) in the third paragraph in Section 7.1 Conclusions should be revised as necessary.	As-built Drawing C7 is a true and correct slurry wall which is described in the final the DBR (ERRG, 2014). As described in wall will be installed from the designed fi noncontiguous lens of Bay Mud (identifie shell fragments), to an elevation of appro The details described in paragraph two of in reference to the nearshore slurry wall w was installed by the Phase I contractor in
8. Appendix M Quality Control Testing Results The Daily-Compaction Test Report by Smith-Emery San Francisco dated 7/5/18 presents 13 field compaction test results all marked as passing. However, the specified relative compaction is shown as 95% and all the test results are between 91 and 93 percent of the maximum dry density which indicates that all the test results failed to meet the compaction specification. All the reported test results should have been indicated as failing and the appropriate box below the results table should have indicated that the material tested did not meet requirements of the jurisdiction approved documents. The compaction test report should be revised to address and resolve the discrepancy and a discussion on the implications of the failed compaction tests on the performance of the associated work should be included in the report.	As specified in the final DBR for Parcel I material at depths greater than 0.5 foot be be compacted to 90 percent or greater of t near optimum moisture, in accordance wi modified proctor density testing." Refere Test Report by Smith-Emery citing a com in error and the reported test results rangi the maximum dry density were correctly The compaction test reports in Appendix as necessary, to resolve this discrepancy.
9. Appendix O Weekly Control Meeting Minutes. Project QC Meeting Notes from QC Meeting 45 (08.29.2017) The bolded text at the bottom of Item 5 states that compaction was not performed during backfilling because the backfilling work was shoreline work and there were no compaction requirements. However, our review of As-Built Drawing C5 Subgrade Excavation Volumes shows that 204 cubic	Please note that construction of the shore April 2018 (QC Meeting 76, 04/10/2018) QC Meeting 45 (8/29/2017) discuss back panhandle area. Thus, backfilling along th be in reference to the Tidal Wetlands. As Excavation Volumes correctly shows a fi

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yards of fill was placed in conjunction with the revetment and As-Built Drawing C3 Shoreline Revetment Detail shows "Compacted foundation" below the geogrid. The meeting note indicates that the DBR requirement was not followed and additionally that the "Compacted foundation" text in As-Built Drawing C3 is in error. The As-Built drawing should be revised accordingly and the implications of the presence of an uncompacted foundation layer, at least locally, on the long-term performance of the revetment should be evaluated.	the Tidal Wetland during construction of
10. Appendix O Weekly Control Meeting Minutes. Project QC Meeting Notes from QC Meeting 49 (09.26.2017) The bolded text at the end of Item 5 refers to brick as Naturally Occurring Radioactive Material (NORM) and states that the tentative plan was to leave the bricks in place. The Comments/Questions section after Item 11 in the Project QC Meeting Notes from QC Meeting 53 (10/24/2017) indicates that fire brick was left in place in the North Perimeter. The Comments/Questions section after Item 11 in the Project QC Meeting Notes from QC Meeting #81 (5.15.2018) states that fire brick was NORM and was thereby not subject to Navy cleanup. Although we recognize that manufactured brick may contain NORM, the basis for exempting the manufactured brick materials from removal and disposal at this site is not clear. We also note that the handling and final disposition of the bricks is not discussed in the RACR text. The RACR text should be revised to include the data that identifies and documents the brick materials as NORM, a description of the basis for not removing them during the remedial action, and a discussion of how the bricks were handled and their final disposition.	The data which identifies and documents provided in the RACR Appendix W Surv As an example, see North Perimeter SU 0 Point Naval Shipyard, Parcel E-2 Radiolo Subgrade Data Report. A discussion of how the bricks were hand been added to Section 3.4.2, Low-Level F revised to read as follows: "Materials that exceeded the radiological handled as LLRW. Materials that were de fire-brick, were removed during the ex-si dispositioned as LLRW. Approximately 8 were placed in bins as LLRW. The bins w LLRW contractor for disposal. Appendix manifests."

Response to Comments on the *Draft Remedial Action Completion Report, Parcel E-2 Phase II, Hunters Point Na California, December 2019, DCN: APTM-2005-0013-0047*	
Comments by: Tami LaBonty, California Department of Fish and Wildlife, Office of Spill Prevention and Response, comment	
Comment	**Respons**
1. Appendix T. Please label all photographs with the date, a brief description of the photo, and the direction the photo was taken where appropriate.	Appendix T includes results of the b biological inspections as prepared by I remedial action performed by APTIM. APTIM must first coordinate with the determine a suitable level of effort and version of the Biological Survey Report Final RACR.
2. Page T-41. The version of Appendix T that we received starts on page T-41. Are pages T-1 to T-40 supposed to be included in Appendix T?	Appendix T, 2,547 pages in total, should page T-2,547. Future submittals of this A completeness prior to submittal.
3. Pages T-114 to T-130. The Daily Biological Monitoring Forms dated 1/1/17 and 1/18/17 are out of sequence in the appendix. These forms are included between the forms dated 1/26/17 and 4/03/17. Please rearrange the forms and associated photographs into chronological order.	The daily biological monitoring forms in rearranged into chronological order as ap
4. Page T-585 and T-696. The Daily Biological Monitoring Forms indicate nesting American Avocets have been observed at two distinct active nest sites and a 50 foot activity exclusion buffer was being maintained around both nests (first indicated on the form dated 5/31/17 for the first nest site, and on 6/12/17 for the second nest site). Please include photographs of these two nests sites with the corresponding monitoring forms, if available.	APTIM will contact their subcontractor N not suitable photographs of these two nes any corresponding monitoring forms.
5. Page T-1972. From page T-1972 forward, please check the dates on the Daily Biological Monitoring Forms to ensure they are correct and revise as needed. Some of the forms are dated with the year 2016 instead of 2017. Some of the forms have the same day of the month (e.g., page T-1979 11/2/17 and page 1994 11/2/16).	APTIM must first coordinate with their s determine a suitable level of effort and th version of the Biological Survey Report v RACR.

Response to Comments on the *Draft Remedial Action Completion Report, Parcel E-2 Phase II, Hunters Point Na California, December 2019, DCN: APTM-2005-0013-0047*	
Comments by: Karen Ueno, US Environmental Protection Agency, comments dated March 6, 2020	
Comment	**Respons**
1. U.S. EPA supports DTSC's comments on the draft RACR that were submitted to the Navy on 03/05/2020 and which are attached for convenience. EPA attempted not to repeat DTSC's comments except for particularly important concerns.	Comment noted.
2. Section 3.2.10.1 indicates that there are more than the apparent 6 FWV/FCR identified in Section 3.12. Correct this discrepancy and include clear descriptions in the RACR of all work variances and change requests and their approval status.	Section 3.2.10.1 introduces the acronym which there are two: FWV-04 and FWV- introduces the acronym for Survey Unit f acronyms, while similar, are not intercha
3. Section 4 includes many FWV/FCRs, but no clear indication of approval status. The RACR needs to clearly identify all FWV/FCR and their approval status. See comment, above.	As summarized in Section 3.12, Deviatio total of six FCRs and FWVs were created project. FCRs and FWVs were prepared a unexpected changes or to improve produc FWVs under Section 3.12, along with the are presented in Appendix G.
4. "Recommendations and Ongoing Activities" needs to clearly identify all Phase II work being deferred to the Phase III contractor, with cross-references to the approved FWV/FCR.	For clarity, Section 7.2, Recommendation been revised to include the following two • "Import, place, and compact the est complete construction of the founda from the Phase II RA; resolved Aug inspections with the Navy (Appendi • Install the final upgradient well netw (Section 3.2.15), deferred from the Navy approval of FCR-006 (Appen
5. The Navy's "Certification Statement" should acknowledge the FWV/FCRs approved by the Navy, called out in the RACR (including design changes), and the specific Phase II work deferred to Phase III. Otherwise the certification is less meaningful and could be misconstrued as construction completed as originally designed.	For clarity the text of Section 8.0, Certifi revised to read as follows: "I certify that this RACR memorializes c activities to implement the RA at Parcel E Francisco, California specifically 1) cons revetment structure; 2) excavation for the site grading and consolidation of excavat installation of the Parcel E-2 upland slurr surface scanning, remediation, and cleara The RA was implemented pursuant to the (ERRG, 2014), and in accordance with th deviations noted herein. This RACR docu portion of the remedy selected in the ROD revetment; site grading and consolidation debris; and upland slurry wall installation activities have been presented in detail in additional construction activities for this anticipated at this time, thus these portion complete."
6. As indicated in Section 4.2, the slurry wall does not meet design specifications due to a subsurface obstruction. This appears to be a substantive design deviation. The RACR needs to identify the FWV/FCR that documents the change. The RACR also needs to adequately demonstrate, aside from a reference to a 1958 report, that weathered	As designed, the upland slurry wall is cor because it was not intended to key into an document an approximate 200-foot sectio to obtain the full depth of design, the wal deep as practical into the geologic feature of the groundwater modeling predictions

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Comments by: Karen Ueno, US Environmental Protection Agency, comments dated March 6, 2020	
serpentine rock is creating the obstruction and why no alteration to the slurry wall is necessary to accommodate for such weathered obstruction.	(Appendix F; ERRG. 2014) is considered contract. See also response to San Francisco Bay R Board comment #15.
7. Was the survey discussed in Section 4.4, performed with QA by an independent source?	During implementation of the Parcel E-2 (Battelle) was hired by the Navy to monit data process and evaluation. While Battel check surveys of the post excavation SU' visual observations of APTIM's in-proce
8. In Section 4.5, 9,277 cubic yards of fill will be deferred to Phase III. Identify the FWV/FCR that support this change and include the deferred activity, cross-referenced to the appropriate FWV/FCR, in "Recommendations and Ongoing Activities." See comments, above.	For clarity, the final sentence of paragrap revised to read as follows: "These punch list items, including deferra the estimated 9,277 cy of fill required to foundation layer, were verified as comple RPM on August 15, 2019." See also response to comment #4 above.
9. Section 4.6 states that well completion is pending removal of rock and placing of concrete collars on the wells (FCR 6 approved these changes). Include the deferred activity, cross-referenced to the appropriate FWV/FCR, in "Recommendations and Ongoing Activities." See comments, above.	Concur. See response to comment #4 above.
10. In Section 4.8, demonstrate how the as-built condition of the cover remains protective given the risk modeling and the as-built conditions.	The risk modeling presented is in accorda Action Work Plan, Section 5.7 Risk Mod modeling to demonstrate the radiological This directive is also in accordance with t issued in support of this Contract Task O Contractor shall, "…perform risk modelir radiological risk at the final ground surfa demarcation layer and soil cover perform management range specified in the NCP Risk modeling for the interim site conditi the final cover system, is considered outs
11. The Remedial Design Package (Remedial Action Monitoring Plan, Land Use Control Remedial Design, Operation and Maintenance Plan, and Construction Quality Assurance Plan) will need to be updated and/or revised prior to and after the Phase III project, including final landfill gas collection and control system and monitoring program and the leachate collection and control system.	Comment noted This work is beyond the scope of this con be addressed by the Navy.
12. The standard practice in closing bayshore landfills where waste is partially under groundwater (with or without slurry wall containment) is to maintain an inward gradient from the Bay to the fill by pumping leachate and monitoring the gradient. We note that inboard extra wells have been constructed. The complete extraction and pumping system should be included in Phase III.	Comment noted This work is beyond the scope of this con be addressed by the Navy.
13. Has evaluation of the required pumping rates to maintain an inward gradient been completed or planned? If discharge of leachate to POTW is planned, the quality of the leachate should be characterized prior to the construction to verify the need for a pre-treatment, and discussion initiated to establish the viability and feasibility of obtaining a permit.	Comment noted This work is beyond the scope of this con be addressed by the Navy.

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14. Description of as-built design changes from approved plans and specifications is a standard requirement for construction but they are not found in the RACR, nor in the plans and specification as red markups. There are a few red markups, but they are not legible. The RACR should include a section describing design changes, and full markup of the plans and specifications.	The RACR provides Section 3.12, Deviat to describe as-built design changes from t specifications. Reviewing, editing, or oth approved plans and specifications is beyo
15. Please verify the removal and proper disposal of the construction and demolition debris that are noted in Appendix X (Waste Manifest Data) as still on-site.	The material in question was not removed submittal of the Draft RACR. To finalize Transportation for Construction Debris, (Building 258 general debris), has been re 2019."
16. Appendix X Waste Manifest and Waste Data a. The information and presentation don't clearly verify that soils and other wastes were managed appropriately and that the remediation goals of Tables 1-3 were met. Summary tables with sampling data and statistics (and/or prior investigation results) compared with non-hazardous thresholds where the waste was managed as non-hazardous would be helpful, as would verifying that the sampling data remediation goals have been met. The manifest copies are not signed. b. It appears that the Tidal and Freshwater Wetlands Confirmation Testing results indicate locations where hot spot goals were exceeded (red color). Please clarify and if true, describe the actions taken or to be taken to address these exceedances.	a. The final version of Appendix X updated Table, Summary of Was showing the final disposition of a accompanied by a tabulated sum sample results. Waste manifests v final signed versions are represen b. No soil exceeding lead criteria w Tidal Wetlands and Freshwater W work completed in these areas, th move the discussion, tables and f Wetland and Freshwater Wetland sampling and figures forward to t
17. Appendix AA (Draft Soil Data, Laboratory Data Quality Assessment Summary Report). The PCB results for sample TW-EB-T66-001 were rejected. Section 1.5 states, "Surrogate recoveries were less than 10% for some PCB samples, all detected compounds were qualified as "J-" and all non-detected compounds as "R". The second surrogate was within control limits. Although the data were qualified as estimated due to noncompliant surrogate recoveries, data usability was not affected." The RACR does not provide a figure identifying the locations and depths of collected samples or table summaries of the final results. It appears from the sample nomenclature, that this sample was collected in the Tidal Wetland (TW) area (Figure 5). Assuming this is a sediment sample, the "Hot Spot Goal" per Table 1 is 1.8 mg/kg for PCBs in sediment. Please address how these unusable data affected the soil and sediment remedial action goals specified in Section 2.0 of the RACR.	Further investigation of laboratory raw da based on the "rejection" findings in the va narrative reported surrogate recovery was interference is present; therefore, re-extra performed." PCB analysis is performed using 2 colum purposes. The laboratory primarily repor interference and low recovery were obser Column B results showed less interferenc (19.2%), which is above the data validati columns indicate PCBs were not detected will be reported from Column B, with J (matrix interference with possible low bias decisions. EPA protocol also states to "Use professi as surrogate recovery problems may not c
18. Additional comments on the rad portions of the RACR may be forthcoming, as appropriate.	Comment noted.

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Comments by: Jeff White, San Francisco Bay Regional Water Quality Control Board, comments dated March 6, 2020	
Comment	**Respons**
1. Section 3.2.10.1, Excavation to Construct Future Wetlands Bottom excavation was extended 5 feet laterally and 1 foot deeper due to a post-excavation bottom sample analytical result exceeding a hot spot cleanup goal. This resulted in an over-excavation volume of less than 1 cubic yard (yd^3). This bottom soil volume removed is not commensurate with the in-situ soil volume represented by the failed sample analytical result (93 yd^3). According to the Phase II Remedial Action Work Plan (Phase II RAWP) on page 7-9, soil was to have been "removed along the exposed sidewall face a maximum of 25 feet on each side of a failed sidewall sample (and 2 feet outward)," due to a post-excavation sidewall sample analytical result exceeding a hot spot cleanup goal. Yet, according to the Phase II RACR, soil was removed 5 feet on each side of a failed sidewall sample, resulting in an over-excavation volume of approximately 3 yd^3. This sidewall soil volume removed (3 yd^3) is not commensurate with the in-situ soil volume represented by the failed sample analytical result (15 yd^3). Comment 1: Although over-excavation dimensions generally follow the approved Phase II RAWP, we are concerned that over-excavation of contamination was not extensive enough to achieve the hot spot goals throughout the Freshwater Wetland and, consequently, residual pollutants may impact the health of the Freshwater wetland and the Bay.	No contamination was left in place. The c with a 5' lateral step out on each side of e a 2 feet step back (deep). Then 3 additio collected from the new sidewalls step ou was not sufficient, the step out sample wo was necessary until the final limits of con new WP Figure 8). This process did worl further excavation, as described in th performed in the Freshwater Wetland Gri
2. The Phase II RACR states on page 3-10 that "chemical confirmation results exceeded the appropriate hot spot goals in sample grid locations (SU freshwater [FW]) FW-7, -08, -09, -25, -33, and -47 (Figure 5)." The survey unit (SU) grid shown on Figure 5 is not the sampling grid layout shown on multiple figures presented in Appendix G and Appendix X, which was used for cleanup of Freshwater Wetland soil. a. Refer to the appropriate figures and sample grid system b. There was a hot spot goal exceedance for lead at grid location F46. Describe this hot spot goal exceedance and remedial action. c. At grid locations F22 and F29, there were hot spot goal exceedances for combined total petroleum Hydrocarbons (TPH; or summed gasoline-range hydrocarbons [TPH_{GRO}] and motor oil-range hydrocarbons [TPH_{MORO}]). Describe these hot spot goal exceedances and remedial actions.	The Radiological Survey Unit Grids are n and Tidal Wetlands excavation chemical soil exceeding lead or TPH criteria were Wetlands or Freshwater Wetland. Exceed clarity, the RACR has been revised to mo figures associated with the Tidal Wetland excavation, confirmation sampling to the
3. It is unclear why summed concentrations of TPH_{GRO} and TPH_{MORO}, rather than TPH_{DRO} and TPH_{MORO}, were used for comparison of soil sample analytical results to the TPH hot spot goal. Please explain.	Total TPH concentrations are calculated (TPH_GRO, TPH_DRO and TPH_MOR limits for results qualified as not detected i.e 35J + 45U + 35 = 70 35J + 45J + 35U = 80J 35U + 45U + 35U = 45U The data table has been revised to correct
4. It is unclear why 9 to 11 months elapsed between initial confirmation sampling and follow-on, step-out confirmation sampling, as was the case at grid locations F22, F29, and at other locations. Extended exposure of TPH-contaminated soil to the elements (sun, wind, rain) may explain apparent	The long duration between initial excavat of the danger associated with sampling a to bay mud. 95% of the samples collected through the use of an excavator. The leng

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cleanup to levels below the TPH hot spot goal when, in reality, residual TPH-contaminated soil remains in the Freshwater Wetland. Explain the long duration of time between sampling events at grid locations F22, F29, and at other locations. It may be necessary to resample at TPH-contaminated locations to demonstrate attainment of the TPH hot spot goal.	confirmation and follow-up is a direct res excavator to be available to assist in the f Regarding Freshwater Wetland samples c two locations contained 6 to 7 feet of wat remediation. Remediation could only be c of reaching the bottom of the excavation. waiting for a machine to be free. Given the volume of water contained witl a decision was made to allow for us much prior to resuming additional excavation a
5. On the last page of Appendix E, Low Level Radiological Waste Manifests, a document, dated October 17, 2018, summarizes the lead concentrations for the following low-level radiological waste (LLRW) drum samples C8-U11 (13,000 mg/kg); and D12-U7 (140,000 mg/kg). The document states: "Per the APTIM Parcel E-2 Work Plan, Section 5.5.4 "A minimum of 1 foot in each direction of the surrounding soil will be removed and designated as LLRW. Therefore this soil was collected and designated as LLRW…Therefore, in accordance with BB&E guidelines, APTIM presented these materials to BB&E (HPNS) for radiological characterization and disposal." Describe the "2 [LLRO] remediations" in sufficient detail and show the areas on one or more maps. Provide acceptable documentation demonstrating the removal of a minimum of 1 foot in each direction of the surrounding soil, as well as the results of sampling and analysis demonstrating the attainment of hot spot goals. Provide an acceptable technical justification for over-excavating only 3 ft^3, given the level of lead contamination in this LLRW. Provide the waste characterization laboratory analytical reports; completed, approved disposal facility waste profile documents; and the manifests that account for the transportation and disposal of this lead-contaminated LLRW.	The objects in question were detected and specifically RSY pad C8 Use 11 and D12 layout of the RSY pad area. LLRO remed Appendix Z, RSY Pad Data Packages. In summary, the remediation referenced v lead contamination remediation. The min the reference to the work plan text, is for the letter in Appendix E is talking about i result of LLRO remediation which was d Disposal of this lead-contaminated LLRW
6. As stated in Field Work Variance No. 5 (Appendix G), dated May 29, 2018, the Freshwater Wetland step-out, over-excavation "process has cleared all sample grid locations except for F08 and F25, which continue to demonstrate elevated concentrations for Lead (Figure 2)." At grid locations FW-SW-F25-SO-005 and FW-SW-F25-SO-006, lead was present in soil at concentrations of 33,000 mg/kg and 2,100 mg/kg along the south and west sidewalls (third over-excavation). It does not appear that sidewall over-excavation was extended to achieve the hot spot goal. Provide documentation that sidewall over-excavation was extended to achieve the hot spot goal along the south and west sidewalls at FW-SW-F25-SO-005 and FW-SW-F25-SO-006. If the lead-contaminated soil at those locations was not acceptable removed, then provide a plan to address residual lead in soil where present at concentrations above the hot spot goal.	The sidewall exceedances observed in FW investigation efforts. Specifically, the wes excavated with metal debris and located a For better clarity, the RACR has been rev tables and figures associated with the Tid Wetland excavation, confirmation sampli
7. Field Work Variance No. 5 (Appendix G) describes an effort to establish the extent of lead contamination west of sampling girds F08 and F16, by exploratory test pitting, sampling, and analysis for lead. Based on the laboratory analytical results, the bounded area shown on Figure 2 was proposed for over-excavation, to an approximate depth of 4 to 7 feet bgs. However, the Phase II RACR does not provide information sufficient to	a. No soil exceeding lead criteria w lead contamination conducted un new Figure 8 has been added to t excavations limits and the lead re samples.

determine whether or not the lead-contaminated soil within the bounded area was removed and properly disposed.

A. Describe whether or not the bounded area on Figure 2 was actually over-excavated. If it was, then provide acceptable documentation of the work and the results of confirmation sampling and analyses demonstrating the attainment of hot spot goals.

   On Figure 2, the planned limits for over-excavation of lead-contaminated soil overlap sampling grids F08 and F16. However, the nomenclature used for the test pit samples includes "F25", which is also a grid location some distance away from the test pits (and addressed by Comment 6 above).

B. Confirm that the locations of the test pits and planned over-excavation are as they appear on Figure 2.

C. It is not clear why for some step-out, sidewall over-excavations three confirmation samples were collected (e.g., FW-SW-F25-SO-002, -003, and -004 on 2/15/18 for the 35,000 mg/kg south sidewall exceedance of 12/20/17), and for other excavations only one sample was collected (e.g., FW-SW-F25-SO-005 on 3/6/18 for the 48,000 mg/kg south sidewall exceedance on 2/15/18 and FW-SW-F25-SO-006 on 3/6/18 for the 46,000 mg/kg west sidewall exceedance on 2/15/18). Explain the rationale for collecting either one or three sidewall confirmation samples. Identify where in the Phase II RAWP the sampling frequency is described.

D. In Appendix G, the table "HPNS Parcel E-2 Tidal and Freshwater Wetlands Confirmation Testing Results" includes lead results for FW-EB-PBOX- series and FW-SW-PBOX-series samples. Identify on a map these sample locations, and describe in the text what the results represent, as well as any follow-on action performed or still necessary to address lead contamination of up to 15,000 mg/kg (FW-SW-PBOX01-S003).

b. The referenced figure has been re Figure 8, which shows the final b excavation for the final lead exca

c. During the initial phases of chasi sidewall of FW-SW-F25, the con selected samples were analyzed t excavation limits are shown in Fi concentrations in the excavation bottom and sidewall confirmation RAWP required frequency.

d. New RACR figure 8 shows the lo the lead. RACR Table X, shows from initial to final.

8. Appendix X describes an investigation in the "Metal Slag and Ship Shielding Area." Six five-feet deep by four-feet wide excavations were completed to characterize the extent of lead contamination (Figure 4). Bottom samples were collected at 5 feet and sidewall samples at 2.5 feet (only the sidewall facing the Freshwater Wetland was sampled). Samples were analyzed for lead, and the results are summarized below.

Location	Bottom	Sidewall	Location	Bottom	Sidewall
FW-F16-ID-001	190,000	89,000	FW-F25-ID-001	5,300	75,000
FW-F16-ID-002	640	23,000	FW-F25-ID-002	14,000	190
FW-F16-ID-003	290	27,000	FW-F25-ID-003	61	1,200

Note: Results expressed in mg/kg. Results in red exceed the hot spot cleanup goal for lead.

Appendix X describes the following actions taken (presumably) to excavate the lead contamination in the Metal Slag and Ship Shielding Area.

- An Area around 100 feet by 100 feet was excavated
- Three sidewall locations required over-excavation
- One bottom sample required over-excavation (to 7 feet bgs).

The level of detail provided for this excavation work is inadequate. The Phase II RACR, among other things, should:

No soil exceeding lead criteria were left i contamination conducted under FWV #5. (Figure 8) has been added to the RACR s and the lead results of final confirmation added to summarize the progression of sa

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a. Clarify whether or not this excavation removed soil within the bounded area shown on Figure 4 (and Figure 2 of Appendix G). b. Depict the 100-feet by 100-feet excavation on a map. c. Describe the excavation depths. d. Present the results of confirmation sampling and analyses that demonstrate removal of the full extent of lead contamination where present at concentrations above the hot spot goal. e. If it cannot be demonstrated that the full extent of lead-contaminated soil was removed, then provide a plan to address unacceptable levels of residual lead in soil.	For better clarity, the RACR has been rev tables and figures associated with the Tid Wetland and lead excavation, confirmatio
9. Appendix X states that "the [soil] waste [excavated from the Metal Slag and Ship Shielding Area] was characterized and stockpiled for off-site disposal. Resource Conservation and Recovery Act [RCRA] profiling is currently being done by U.S. Ecology under profile #070284198-0." a. Provide (or identify where in the Phase II RACR is located) all waste characterization laboratory analytical data and the completed, approved disposal facility waste profile documents. b. Given that this RCRA hazardous waste (soil) was stored on the site for an extended period, from about May 2018 to July 22, 2019, provide all Waste Inventory Logs and Waste Storage Area Inspection Checklists. c. Include all Uniform Hazardous Waste Manifests (both Generator and TSDF-to-Generator copies), as well as any Land Disposal Restrictions documents.	a. The final version of Appendix X updated Table, Summary of Was showing the final disposition of a accompanied by a tabulated sumr sample results. Lab results for wa Appendix AA, Analytical Data ar b. A summary of all required field d part of the Final RACR submittal c. A summary of all required field d part of the Final RACR submittal
10. According to Appendix X, white crystalline lead oxide particles were observed, and samples were collected and analyzed. The maximum lead concentration was 190,000 mg/kg at location FW-EB-F16-ID-001. Appendix X states that "it would make sense that contamination was a direct result of the lead oxide that was previously used in the ship shielding area." Describe the relationship of the lead contamination discovered during 2018 exploratory test pitting in the "Metal Slag and Ship Shielding Area (App X, Fig. 4)," to the contamination in the Metal Slag Area and the Ship Shielding Area cleaned up from June 2005 to May 2006, and from May 2012 to October 2012, respectively, by time-critical removal actions (TCRAs).	The quoted statement was entered into the statement of "opinion" by the on-site field a statement of fact. For clarity, this statem revised version of Appendix X. Any furth relationship of the lead contamination dis should be considered outside the scope of
11. In Appendix X, there are untitled tables with summary laboratory analytical results for various constituents for the following samples: PE2-SP-FW-COMP01, PE2-SP-FW-COMP02, PE2-SP-FW-COMP3, PE2SP-FW-DU1, PE2-SP-FW-DU2, PE2-SP-FW-DU3, and PE2-SP-FW-FD1. Identify on one or more maps the locations of the above-listed samples, describe in the text what the results represent, as well as any follow-on actions performed or still necessary to address the contamination indicated in the tables for those samples.	For better clarity, the RACR has been rev tables and figures associated with the Tid Wetland and lead excavation, confirmatio
12. In the Appendix X table, "Summary of Waste Materials from Parcel E-2" is indicated shipments of RCRA hazardous waste (soil) originating from the Freshwater Wetland Over-excavation and totaling 2,000 tons. On July 22, 2019, the RCRA hazardous waste (soil) was apparently transported to the US Ecology disposal facility in Beatty, Nevada. Based on the sampling dates provided in the Appendix X table, "HPNS Parcel E-2 Tidal and Freshwater	a. The final version of Appendix X updated Table, Summary of Was showing the final disposition of a accompanied by a tabulated sumr sample results. Lab results for wa Appendix AA, Analytical Data ar

Comments by: Jeff White, San Francisco Bay Regional Water Quality Control Board, comments dated March 6, 2020

Wetlands Confirmation Testing Results," waste soil containing elevated lead would have accumulated on site from about October 2017 to July 22, 2019. a. Include (or identify where in the Phase II RACR is located) all waste characterization laboratory analytical data and the completed, approved disposal facility waste profile documents. b. Given that this RCRA hazardous waste (soil) was stored on the site for an extended period, from about May 2018 to July 22, 2019, provide all Waste Inventory Logs and Waste Storage Area Inspection Checklists c. Include all Uniform Hazardous Waste Manifests (both Generator and TSDF-to-Generator copies), as well as any Land Disposal Restrictions documents	b. A summary of all required field d part of the Final RACR submittal c. A summary of all required field d part of the Final RACR submittal
13. Discharge of Lead to the Bay – As described above, we are concerned that residual contamination poses a threat to the health of the Freshwater Wetland and the Bay Given the proximity of lead oxide particles and lead-contaminated soil to the Freshwater Wetland, Freshwater Wetland Outfall, and the rock-lined swale that discharges to the Bay, evaluate the risks of exposure to terrestrial and aquatic wildlife. We recommend sampling and testing water of the Freshwater Wetland and the Freshwater Wetland Outfall, to evaluate the risks. Describe the results of the evaluation.	All of the lead contamination identified in F16 and F25 was removed for off-site dis RACR Figure 8 shows the location of the lead. New RACR Table 5, shows the prog initial to final. Additional investigation, including a com evaluation, should be considered outside contract.
14. Section 3.2, Remedial Action Objectives The control of groundwater via the Upland Slurry Wall and French drain, as well as by other remedies (Nearshore Slurry Wall and monitoring well network), will address the groundwater remedial action objectives (RAOs) for the protection of wildlife and are as follows: Prevent or minimize migration of chemicals of potential ecological concern to prevent discharge that would result in concentrations greater than the corresponding water quality criteria for aquatic wildlife. Prevent or minimize migration of A-aquifer groundwater containing total TPH concentrations greater than the remediation goal (where commingled with CERCLA substances) into SF Bay. Given that there is the 220-foot gap in the Upland Slurry Wall, described in detail how the performance of the Upland Slurry Wall will be monitored to ensure the achievement of the RAOs. Identify the monitoring well(s) between the Upland Slurry Wall and the Bay, to be used to monitor the performance of Upland Slurry Wall. Discuss whether or not the Remedial Action Monitoring Plan should be updated to account for the 220-foot gap in the Upland Slurry Wall through which A-Zone groundwater flows to the landfill, leaches landfill contamination, and travels to the Bay.	As designed, the upland slurry wall is cor because it was not intended to key into an the final DBR, some groundwater will flo but groundwater modeling predictions (D indicate that upgradient flow will mostly slurry wall or diverted to the freshwater w (Section 3.2.14.7) installed on the upgrad wall. The nearshore slurry wall, which was inst 2016, serves to maximize the travel time upgradient of the barrier (i.e., the landfill) nearshore slurry wall will be supplemente to support monitoring and, if necessary, l
15. Section 3.2.14, Upland Slurry Wall Installation and Section 4.2, Upland Slurry Wall and French Drain The Phase II RACR concludes that the 220-foot gap in the Upland Slurry Wall results from "a distinct layer of serpentine weathered bedrock encountered approximately 10 feet bgs in the northwestern corner of the Parcel E-2 site." After completion of a subsurface investigation involving 12 borings and a review of "boring logs from historic documentation within the area," the Phase II RACR concludes that serpentine weathered bedrock was the "buried obstruction" that impeded upland slurry wall construction.	a. Formal boring logs were not prep drill rig investigation described u The step-out investigation was or presence/absence of the (as of tha obstruction in relation to the prop alignment. As described under Se the subsurface obstruction was ob b. Electronic copies of the relevant documentation within the area wi RACR submittal.

Response to Comments on the *Draft Remedial Action Completion Report, Parcel E-2 Phase II, Hunters Point Na California, December 2019, DCN: APTM-2005-0013-0047*	
Comments by: Jeff White, San Francisco Bay Regional Water Quality Control Board, comments dated March 6, 2020	
a. Provide the boring logs and other relevant data from the 12-boring step-out investigation of the "buried obstruction," supporting the conclusion that serpentine weathered bedrock was the buried obstruction that impeded Upland Slurry Wall installation. b. Provide the boring logs from historic documentation within the area, supporting the conclusion that serpentine weathered bedrock was the buried obstruction that impeded Upland Slurry Wall installation.	
16. Last, please make every effort to address these comments in conspicuous, frontal parts of the report in text, tables, and figures, insofar as possible, rather than in the myriad pages of the appendices.	Comment noted.

Table X:
HPNS Parcel E-2 Freshwater Wetlands Chemical Confirmation Testing Results
(Excluding Sidewall Grids FW-SW16 and FW-SW25)

Parameter		TPH				Metals		Polychlorinated Biphenyls (PCBs)							
		Diesel	Motor Oil	Gasoline	Total TPH	Copper	Lead	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCBs
Tier 2 Hot Spot Goals		Total TPH - 3500				2,700	1,970	Total PCBs - 1.8							
Sample ID / Grid	Date Collected	mg/Kg	mg/Kg	mg/Kg	3500	2700	1970	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	1.8
FW-EB-F01-001	10/10/2017	630 U	760	1.4	761	330	550	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.13	0.13
FW-SW-F01-001	10/10/2017	100 U	90	0.026 U	90	7.6	48	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.010 U	0.016 U
FW-SW-F01-002	10/10/2017	53 U	57	0.027 U	57	17	100	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.019	0.019
FW-EB-F02-001	10/10/2017	130 U	520	0.3	520	150	460	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.044	0.044
FW-SW-F02-001	10/10/2017	100 U	150	0.026 U	150	140	820	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.12	0.12
FW-EB-F03-001	10/10/2017	590 U	540	0.09	540	53	460	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.028	0.028
FW-SW-F03-001	10/10/2017	520 U	430	0.026 U	430	73	720	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.010 U	0.017 U
FW-EB-F04-001	10/10/2017	710 U	530	0.035 U	530	230	790	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.044	0.044
FW-SW-F04-001	10/10/2017	540 U	540 U	0.027 U	540U	220	990	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.011 U	0.017 U
FW-EB-F05-001	10/10/2017	130 U	250	0.075	250	23	100	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.013 U	0.021 U
FW-SW-F05-001	10/10/2017	540 U	720	0.027 U	720	51	570	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.011 U	0.017 U
FW-EB-F06-001	10/10/2017	63 U	38	0.032 U	38	9.1	19	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
FW-SW-F06-001	10/10/2017	530 U	530 U	0.027 U	530 U	82	370	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.011 U	0.017 U
FW-EB-F07-001	10/10/2017	730 U	730 U	0.037 U	730 U	31	230	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.035	0.035
FW-SW-F07-001	10/10/2017	110 U	190	0.028 U	190	54	240	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.051	0.051
FW-SW-F07-002 (Over excavated)	10/10/2017	54 U	85	0.027 U	85	18	**5600**	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.018	0.018
FW-SW-F07-SO-002 (Final)	12/20/2017	--	--	--	--	64	320	--	--	--	--	--	--	--	--
FW-SW-F07-SO-003 (Final)	2/15/2018	--	--	--	--	--	440	--	--	--	--	--	--	--	--
FW-SW-F07-SO-004 (Final)	2/15/2018	--	--	--	--	--	140	--	--	--	--	--	--	--	--
FW-EB-F08-001	10/10/2017	650 U	370	0.3	370	70	440	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.16	0.16
FW-SW-F08-001 (Over excavated)	10/10/2017	22 U	46	0.028 U	46	150	**2600**	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	2.7	**2.7**
FW-SW-F08-001 (Over excavated)	7/31/2018	--	--	--	--	--	--	0.053 U	0.140 U	0.071 U	0.071 U	0.071 U	0.91	1.9	**2.81**
FW-SW-F08-001 (Final)	9/26/2018	--	--	--	--	--	--	0.014 U	0.037 U	0.018 U	0.018 U	0.018 U	0.12	0.21	0.33
FW-SW-F08-SO-001 (Over excavated)	12/20/2017	--	--	--	--	85	**8100**	--	--	--	--	--	--	--	--
FW-SW-F08-SO-002 (Final)	2/15/2018	--	--	--	--	--	170	--	--	--	--	--	--	--	--
FW-SW-F08-SO-003 (Final)	2/15/2018	--	--	--	--	--	120	--	--	--	--	--	--	--	--
FW-SW-F08-SO-004 (Final)	2/15/2018	--	--	--	--	--	120	--	--	--	--	--	--	--	--
FW-EB-F09-001 (Over excavated)	10/10/2017	680 U	4000	1.8	**4002**	180	640	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.62	0.62
FW-EB-F09-SO-001 (Final)	12/20/2017	270	360	0.030 U	630	--	--	--	--	--	--	--	--	--	--
FW-EB-F10-001	10/10/2017	740 U	810	0.77	811	460	1700	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.2	0.2
FW-EB-F11-001	10/10/2017	620 U	620 U	0.032 U	620 U	15	200	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.012 U	0.020 U
FW-EB-F12-001	10/10/2017	70 U	94	0.15	94	11	36	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.014 U	0.022 U
FW-EB-F13-001	10/10/2017	680 U	620	0.14	620	37	140	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.032	0.032
FW-EB-F14-001	10/10/2017	72 U	120	0.068	120	25	110	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.014 U	0.023 U
FW-EB-F15-001	10/12/2017	100 U	150	0.026 U	150	17	44	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.19	0.19
FW-SW-F15-001	10/12/2017	51 U	330	0.024	330	110	180	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.12	0.12
FW-EB-F16-001	10/11/2017	320	830	0.37	1150	50	580	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.15	0.15
FW-EB-F17-001	10/11/2017	120 U	140	0.28	140	30	320	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.028	0.028

Table X:
HPNS Parcel E-2 Freshwater Wetlands Chemical Confirmation Testing Results
(Excluding Sidewall Grids FW-SW16 and FW-SW25)

Parameter		TPH				Metals		Polychlorinated Biphenyls (PCBs)							
		Diesel	Motor Oil	Gasoline	Total TPH	Copper	Lead	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCBs
FW-EB-F18-001	10/11/2017	680 U	1200	2	1202	140	1300	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.66	0.66
FW-EB-F19-001	10/13/2017	700 U	1700	0.25	1700	160	790	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.094	0.094
FW-EB-F20-001	10/13/2017	660 U	710	1.2	711	29	230	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.069	0.069
FW-EB-F21-001	10/12/2017	620 U	1800	0.12	1800	68	130	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.032	0.032
FW-EB-F22-001 (Over excavated)	10/12/2017	7000 U	4900	0.32	**4900**	84	320	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.086	0.086
FW-EB-F22-001 (Final)	7/31/2018	51	190	0.39 J	241	--	--	--	--	--	--	--	--	--	--
FW-EB-F23-001	10/12/2017	640 U	600	0.058	600	100	580	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.041	0.041
FW-EB-F24-001	10/12/2017	510 U	1100	0.026 U	1100	440	120	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.33	0.33
FW-EB-F25-001	10/11/2017	130 U	130	0.033 U	130	1400	700	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.46	0.46
FW-EB-F26-001	10/11/2017	61 U	95	0.030 U	95	21	92	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.059	0.059
FW-EB-F27-001	10/11/2017	13 U	52	0.031 U	52	13	40	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
FW-EB-F28-001	10/11/2017	630 U	1600	0.031 U	1600	5.9	50	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.012 U	0.020 U
FW-EB-F29-001 (Over excavated)	10/13/2017	**8400 U**	**8400 U**	1.7	1.7	300	550	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.17	0.17
FW-EB-F29-001 (Final)	9/26/2018	210	450	0.21 U	660	--	--	--	--	--	--	--	--	--	--
FW-EB-F30-001	10/13/2017	690 U	350	17	367	120	410	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.025	0.025
FW-EB-F31-001	10/13/2017	65 U	100	0.11	100	38	42	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.013 U	0.021 U
FW-EB-F32-001	10/13/2017	64 U	80	0.032 U	80	21	8.7	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
FW-EB-F33-001	10/12/2017	530 U	420	0.046	420	590	160	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.096	0.096
FW-SW-F33-001 (Over excavated)	10/12/2017	100 U	320	0.028	320	**3300**	160	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.25	0.25
FW-SW-F33-SO-001 (Final)	12/20/2017	--	--	--	--	1000	87	--	--	--	--	--	--	--	--
FW-SW-F33-SO-002 (Final)	2/15/2018	--	--	--	--	390	--	--	--	--	--	--	--	--	--
FW-SW-F33-SO-003 (Final)	2/15/2018	--	--	--	--	390	--	--	--	--	--	--	--	--	--
FW-EB-F34-001	10/11/2017	130 U	240	0.11	240	29	180	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.062	0.062
FW-SW-F34-001	10/11/2017	110 U	310	0.027 U	310	130	50	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.17	0.17
FW-SW-F34-002	10/11/2017	22 U	52	0.028 U	52	32	110	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.073	0.073
FW-EB-F35-001	10/13/2017	62 U	86	0.031 U	86	87	270	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013	0.013
FW-EB-F36-001	10/13/2017	640 U	640 U	0.47	0.47	130	390	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.049	0.049
FW-EB-F37-001	10/13/2017	870 U	1800	2.2	1802	370	970	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.25	0.25
FW-EB-F38-001	10/13/2017	620 U	570	0.87	571	58	330	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.026	0.026
FW-EB-F39-001	10/13/2017	680 U	1700	0.57	1701	95	210	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.034	0.034
FW-EB-F40-001	10/13/2017	630 U	730	0.12	730	45	66	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.012	0.012
FW-EB-F41-001	10/12/2017	56 U	290	0.052	290	73	41	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.041	0.041
FW-SW-F41-001	10/12/2017	100 U	260	0.025 U	260	300	70	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.55	0.55
FW-EB-F42-001	10/11/2017	65 U	260	0.033 U	260	22	230	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.013 U	0.021 U
FW-SW-F42-001	10/11/2017	55 U	140	0.038	140	120	150	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.58	0.58
FW-SW-F42-002	10/11/2017	53 U	71	0.026 U	71	31	150	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.12	0.12
FW-EB-F43-001	10/13/2017	63 U	85	0.032 U	85	48	180	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.024	0.024
FW-SW-F43-002	10/13/2017	100 U	82	0.026 U	82	58	120	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.22	0.22
FW-EB-F44-001	10/13/2017	630 U	630 U	0.08	0.08	2100	150	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.061	0.061
FW-SW-F44-001	10/13/2017	52 U	52 U	0.026 U	52 U	24	86	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.12	0.12

Table X:
HPNS Parcel E-2 Freshwater Wetlands Chemical Confirmation Testing Results
(Excluding Sidewall Grids FW-SW16 and FW-SW25)

Parameter		TPH				Metals		Polychlorinated Biphenyls (PCBs)							
		Diesel	Motor Oil	Gasoline	Total TPH	Copper	Lead	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCBs
FW-EB-F45-001	10/13/2017	340	580	0.15	920	740	200	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.057	0.057
FW-SW-F45-001	10/13/2017	510 U	890	0.026 U	890	680	440	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.37	0.37
FW-EB-F46-001 (Over excavated)	10/13/2017	620 U	1300	0.33	1300	67	**2000**	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.025	0.025
FW-EB-F46-001 (Final)	7/31/2018	--	--	--	--	130	310	--	--	--	--	--	--	--	--
FW-SW-F46-001	10/13/2017	510 U	420	0.026 U	420	700	300	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.15	0.15
FW-EB-F47-001	10/12/2017	62 U	330	0.031 U	330	69	140	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.027	0.027
FW-SW-F47-001	10/12/2017	550 U	400	0.027 U	400	200	170	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.18	0.18
FW-SW-F47-002 (Over excavated)	10/12/2017	100 U	260	0.026 U	260	440	180	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	5.1	1.9	**7**
FW-SW-F47-SO-002 (Final)	12/20/2017	--	--	--	--	--	--	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.12	0.12
FW-SW-F47-SO-003 (over excavated)	2/15/2018	--	--	--	--	--	--	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	2.9	0.11 U	**2.9**
FW-SW-F47-SO-004 (Final)	2/15/2018	--	--	--	--	--	--	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.45	0.11 U	0.45
FW-SW-F47-SO-005 (Final)	3/6/2018	--	--	--	--	--	--	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.011 U	0.018 U

Notes:
FW - Freshwater Wetlands Sample
EB -Excavation Bottom Confirmation Sample
SW - Excavation Sidewall Confirmation Sample
Results shown in Red indicate sample exceened the project Action Limit, removed and additonal confirmation sample collected.
U - not detected at the specified reporting limit
J - estimated concentration
Total TPH includes the total of detected TPH-Gasoline + TPH-Diesel + TPH-Motor Oil
Total PCB includes the total of detected Arochlors, for Arochlors not detected, reporting limits are not included in the Total.
mg/kg - miligrams per kilogram
-- not analyzed for this parameter

Table X:
HPNS Parcel E-2 Freshwater Wetlands Lead Excavation Confirmation Sampling Results

Parameter			TPH				Metals		Polychlorinated Biphenyls (PCBs)							
			Diesel	Motor Oil	Gasoline	Total TPH	Copper	Lead	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCBs
Tier 2 Hot Spot Goals			Total TPH - 3500				2,700	1,970	Total PCBs - 1.8							
Sample ID / Grid	Purpose	Date Collected	mg/Kg	mg/Kg	mg/Kg	3500	2700	1970	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	1.8
FW-EB-F16-001	Initial Grid Bottom Sample	10/11/2017	320	830	0.37	1150	50	580	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.15	0.15
FW-SW-F16-001	Initial Grid Sidewall Sample	10/11/2017	11 U	38	0.027 U	38	35	1100	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.7	0.7
FW-EB-F25-001	Initial Grid Bottom Sample	10/11/2017	130 U	130	0.033 U	130	1400	700	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.46	0.46
FW-SW-F25-001	Initial Grid Sidewall Sample - removed	10/11/2017	55 U	89	0.027 U	89	98	**2500**	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.8	0.8
FW-SW-F25-002	Initial Grid Sidewall Sample	10/11/2017	55 U	87	0.028 U	87	33	190	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.034	0.034
FW-SW-F25-SO-001	Grid F25 stepout excavation sample	12/20/2017	--	--	--	--	1300	**35000**	--	--	--	--	--	--	--	--
FW-SW-F25-SO-002	Grid F25 stepout excavation sample	2/15/2018	--	--	--	--	--	**48000**	--	--	--	--	--	--	--	--
FW-SW-F25-SO-003	Grid F25 stepout excavation sample	2/15/2018	--	--	--	--	--	210	--	--	--	--	--	--	--	--
FW-SW-F25-SO-004	Grid F25 stepout excavation sample	2/15/2018	--	--	--	--	--	**46000**	--	--	--	--	--	--	--	--
FW-SW-F25-SO-005	Grid F25 stepout excavation sample	3/6/2018	--	--	--	--	--	**33000**	--	--	--	--	--	--	--	--
FW-SW-F25-SO-006	Grid F25 stepout excavation sample	3/6/2018	--	--	--	--	--	**2100**	--	--	--	--	--	--	--	--
After multiple stepout failures initiated test pits to define lead contamination boundaries																
FW-EB-F16-ID-001	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	**190000**	--	--	--	--	--	--	--	--
FW-EB-F16-ID-002	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	640	--	--	--	--	--	--	--	--
FW-EB-F16-ID-003	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	290	--	--	--	--	--	--	--	--
FW-SW-F16-ID-001	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	**89000**	--	--	--	--	--	--	--	--
FW-SW-F16-ID-002	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	**23000**	--	--	--	--	--	--	--	--
FW-SW-F16-ID-003	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	**27000**	--	--	--	--	--	--	--	--
FW-EB-F25-ID-001	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	**5300**	--	--	--	--	--	--	--	--
FW-EB-F25-ID-002	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	**14000**	--	--	--	--	--	--	--	--
FW-EB-F25-ID-003	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	61	--	--	--	--	--	--	--	--
FW-SW-F25-ID-001	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	**75000**	--	--	--	--	--	--	--	--
FW-SW-F25-ID-002	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	190	--	--	--	--	--	--	--	--
FW-SW-F25-ID-003	Lead investigation Test Pit Sample	5/2/2018	--	--	--	--	--	1200	--	--	--	--	--	--	--	--
After initial lead excavation complete																
FW-EB-PBOX01-S001	Final Lead Excavation Sample	6/8/2018	--	--	--	--	--	17	--	--	--	--	--	--	--	--
FW-EB-PBOX02-S001	Final Lead Excavation Sample	6/8/2018	--	--	--	--	--	240	--	--	--	--	--	--	--	--
FW-EB-PBOX03-S001	Over excavated	6/8/2018	--	--	--	--	--	**4200**	--	--	--	--	--	--	--	--
FW-EB-PBOX03-S002	Final Lead Excavation Sample	6/13/2018	--	--	--	--	--	210	--	--	--	--	--	--	--	--
FW-EB-PBOX04-S001	Final Lead Excavation Sample	6/8/2018	--	--	--	--	--	1000	--	--	--	--	--	--	--	--
FW-SW-PBOX01-S001	Over excavated	6/7/2018	--	--	--	--	--	**3300**	--	--	--	--	--	--	--	--
FW-SW-PBOX01-S002	Final Lead Excavation Sample	6/11/2018	--	--	--	--	--	36	--	--	--	--	--	--	--	--
FW-SW-PBOX01-S003	Over excavated	6/11/2018	--	--	--	--	--	**15000**	--	--	--	--	--	--	--	--
FW-SW3-PBOX01-S004	Final Lead Excavation Sample	6/15/2018	--	--	--	--	--	25	--	--	--	--	--	--	--	--
FW-SW-PBOX02-S001	Final Lead Excavation Sample	6/7/2018	--	--	--	--	--	22	--	--	--	--	--	--	--	--
FW-SW-PBOX02-S002	Over excavated	6/7/2018	--	--	--	--	--	**10000**	--	--	--	--	--	--	--	--
FW-SW-PBOX02-S003	Final Lead Excavation Sample	6/11/2018	--	--	--	--	--	29	--	--	--	--	--	--	--	--
FW-SW-PBOX02-S004	Final Lead Excavation Sample	6/11/2018	--	--	--	--	--	130	--	--	--	--	--	--	--	--
FW-SW-PBOX02-S005	Final Lead Excavation Sample	6/11/2018	--	--	--	--	--	49	--	--	--	--	--	--	--	--
FW-SW-PBOX03-S001	Over excavated	6/7/2018	--	--	--	--	--	**3000**	--	--	--	--	--	--	--	--
FW-SW3-PBOX03-S002	Final Lead Excavation Sample	6/13/2018	--	--	--	--	--	540	--	--	--	--	--	--	--	--
FW-SW6-PBOX03-S002	Final Lead Excavation Sample	6/13/2018	--	--	--	--	--	780	--	--	--	--	--	--	--	--
FW-SW-PBOX04-S001	Final Lead Excavation Sample	6/7/2018	--	--	--	--	--	180	--	--	--	--	--	--	--	--
FW-SW-PBOX04-S002	Final Lead Excavation Sample	6/7/2018	--	--	--	--	--	68	--	--	--	--	--	--	--	--

Notes:
FW - Freshwater Wetlands Sample
EB -Excavation Bottom Confirmation Sample

Table X:
HPNS Parcel E-2 Freshwater Wetlands Lead Excavation Confirmation Sampling Results

Parameter	TPH				Metals		Polychlorinated Biphenyls (PCBs)							
	Diesel	Motor Oil	Gasoline	Total TPH	Copper	Lead	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCBs

SW - Excavation Sidewall Confirmation Sample
Results shown in Red indicate sample exceeded the project Action Limit, removed and additional confirmation sample collected.
U - not detected at the specified reporting limit
J - estimated concentration
Total TPH includes the total of detected TPH-Gasoline + TPH-Diesel + TPH-Motor Oil
Total PCB includes the total of detected Arochlors, for Arochlors not detected, reporting limits are not included in the Total.
mg/kg - milligrams per kilogram
-- not analyzed for this parameter

Table X: HPNS Parcel E-2
Tidal Wetlands Chemical Confirmation Results

Parameter		Total Petroleum Hydrocarbons				Metals		Polychlorinated Biphenyls (PCBs)							
		Diesel	Motor Oil	Gasoline	Total TPH	Copper	Lead	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCBs
Tier 2 Hot Spot Goals		Total TPH - 3500				2,700	1,970	Total PCBs - 1.8							
Sample ID / Grid	Date Collected	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
TW-EB-T01-001	7/25/2017	80 U J	80 U	0.53	0.53	65	190 J	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.11	0.11
TW-SW-T01-001	8/23/2017	870 U	700 J	0.24 J	700 J	370	650	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.15	0.15
TW-SW-T01-002	8/23/2017	900 U	540 J	0.21	0.21	250	300	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.14	0.14
TW-EB-T02-001	7/25/2017	68 U	80 J	0.034 U J	80 J	170	340	0.022 U J	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.014 U J	0.036 U J
TW-SW-T02-001	8/23/2017	1000 U	540 J	0.78	541J	100	140	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.18	0.18
TW-EB-T03-001	2/12/2018	110 U	360	0.029 U	360	63	65	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.039	0.039
TW-EB-T04-001	7/25/2017	160 U	480 J	0.21	480 J	280	270	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.42	0.016 U	0.42
TW-SW-T04-001	3/27/2018	93 U	150	0.057	150	42	56	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.067	0.096	0.163
TW-EB-T05-001	2/12/2018	58 U	34	0.029 U	34	25	69	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.094	0.094
TW-EB-T06-001	2/12/2018	23 U	22	0.029 U	22	5.2	17	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.012 U	0.019 U
TW-EB-T07-001	2/12/2018	120 U	90	0.030 U	90	53	120	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.023	0.023
TW-EB-T08-001	2/12/2018	150 U	270	0.44	270	97	150	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.089	0.089
TW-EB-T09-001	2/12/2018	25 U	67	0.26	67	100	130	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.061	0.061
TW-EB-T10-001	2/12/2018	130 U	270	0.3	270	66	59	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.086	0.086
TW-EB-T11-001	7/26/2017	65 U	69 J	0.033 U	69 J	61	130	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.013 U	0.021 U
TW-SW-T11-001	3/26/2018	20 U	110	0.050 U	110	54	130	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.086	0.11	0.196
TW-EB-T12-001	2/12/2018	68 U	100	0.041	100	16	19	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.038	0.038
TW-EB-T13-001	9/5/2017	64 U	130 J	0.032 U	130 J	44	140	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
TW-EB-T14-001	9/5/2017	630 U	630 U	0.032 U	630 U	83	220	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
TW-EB-T15-001	9/5/2017	64 U	170 J	0.092 J	170 J	29 J	73	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 J	0.013 J
TW-EB-T16-001	9/5/2017	67 U	220 J	0.099 J	220 J	480	670	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.045	0.045
TW-EB-T17-001 (over excavated)	9/5/2017	1000 U	1900 J	0.35	0.35	1300	**2900**	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.26	0.26
TW-EB-T17-001 (Final Result)	9/26/2018	--	--	--	--	82	140	--	--	--	--	--	--	--	--
TW-EB-T18-001	2/13/2018	140 U	260	0.21	260	37	44	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.05	0.05
TW-EB-T19-001	2/13/2018	67 U	110	0.083	110	43	58	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021	0.021
TW-EB-T20-001	2/13/2018	75 U	130	0.065	130	44	82	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.066	0.066
TW-EB-T21-001	2/13/2018	67 U	120	0.041	120	46	55	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.032	0.032
TW-EB-T22-001	2/13/2018	120	390	0.13	510	67	94	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.11	0.11
TW-EB-T23-001	2/13/2018	200 U	230	0.16	230	78	160	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.094	0.094
TW-EB-T24-001	2/13/2018	150 U	180	0.29	180	21	57	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.05	0.05
TW-EB-T25-001	2/13/2018	240 U	200	0.088	200	69	290	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.057	0.057
TW-EB-T26-001	2/13/2018	110 U	170	0.061	170	59	180	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.056	0.056
TW-EB-T27-001	2/13/2018	200 U	250	0.51	251	76	250	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.083	0.083
TW-EB-T28-001	2/13/2018	170 U	180	0.12	180	39	140	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027	0.027
TW-EB-T29-001	7/27/2017	6.4 U	6.4 U	0.032 U	6.4 U	30	55	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
TW-SW-T29-001	3/26/2018	18 U	25	0.045 U	25	28	16	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.018 U	0.029 U
TW-SW-T29-002	3/26/2018	15 U	79	0.038	79	45	65	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.056	0.056
TW-EB-T30-001	2/12/2018	590	40 U	0.041 U	590	18	9.5	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.016 U	0.025 U
TW-EB-T31-001	8/24/2017	590 U	520 J	0.030 U	520 J	33	80	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.012 U	0.019 U

Table X: HPNS Parcel E-2
Tidal Wetlands Chemical Confirmation Results

Parameter		Total Petroleum Hydrocarbons				Metals		Polychlorinated Biphenyls (PCBs)							
		Diesel	Motor Oil	Gasoline	Total TPH	Copper	Lead	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCBs
Tier 2 Hot Spot Goals		Total TPH - 3500				2,700	1,970	Total PCBs - 1.8							
TW-EB-T32-001	8/24/2017	130 U	330 J	0.36 J	330 J	46	570	0.021 U	0.021 U	0.021 U	0.038 J	0.021 U	0.021 U	0.013 U	0.021 U
TW-EB-T33-001	8/24/2017	63 U	110 J	0.032 U	110 J	31	140	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.047	0.047
TW-EB-T34-001	9/21/2017	1200	1000	0.14	2200	200	180	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.019	0.019
TW-EB-T35-001	9/21/2017	15	11	0.04	26	210	1500	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.038	0.038
TW-EB-T36-001	9/21/2017	13	12 U	0.030 U	13	13	31	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.012 U	0.019 U
TW-EB-T37-001	9/21/2017	12	12 U	0.030 U	12	15	36	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.012 U	0.019 U
TW-EB-T38-001	9/22/2017	81	71	0.031 U	152	9.4	14	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.012 U	0.020 U
TW-EB-T39-001	9/22/2017	1100	790	0.12	1890	370	1400	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.026	0.026
TW-EB-T40-001	9/22/2017	270	400	0.22	670	780	1900	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.062	0.062
TW-EB-T41-001	2/14/2018	62 U	70	0.035	70	34	97	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.03	0.03
TW-EB-T42-001	2/14/2018	27 U	51	0.034 U	51	20	58	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.014 U	0.022 U
TW-EB-T43-001	2/14/2018	12 U	12	0.027	12	6.3	21	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.012 U	0.019 U
TW-EB-T44-001	2/15/2018	74 U	76	1.4	77	16	53	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.027	0.027
TW-EB-T45-001	2/15/2018	110 U	85	1.6	87	48	130	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.031	0.031
TW-EB-T46-001	2/15/2018	31 U	27	0.069	27	27	23	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.016 U	0.025 U
TW-EB-T47-001	7/28/2017	120 U	96 J	0.031 U	96 J	220	230	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.012 U	0.020 U
TW-SW-T47-001	3/26/2018	14 U	49	0.034 U	49	120	94	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.027	0.027
TW-SW-T47-002	3/26/2018	64 U	160	0.032 U	160	82	250	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.037	0.037
TW-EB-T48-001	8/8/2017	66 U	52 J	0.034 U	52 J	18 J	39	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.079 J	0.079 J
TW-EB-T49-001	8/8/2017	59 U	59 U	0.030 U	59 U	12 J	120	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.012 U	0.019 U
TW-EB-T50-001	8/24/2017	6.3 U	34	0.032 U	34	21 J	44	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
TW-EB-T51-001	9/21/2017	200	160	0.034 U	360	270	410	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.04	0.04
TW-EB-T52-001	9/21/2017	160	100	0.035 U	260	130	510	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.014 U	0.022 U
TW-EB-T53-001	9/21/2017	12	12 U	0.030 U	12	10	31	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.012 U	0.019 U
TW-EB-T54-001	9/21/2017	15	13 U	0.032 U	15	13	13	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
TW-EB-T55-001	9/22/2017	15	12 U	0.029 U	15	14	18	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.012 U	0.019 U
TW-EB-T56-001	9/22/2017	52	49	0.030 U	101	530	630	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.025	0.025
TW-EB-T57-001	9/22/2017	790	590	0.031 U	1380	490	640	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.031	0.031
TW-EB-T58-001	2/14/2018	72 U	91	0.039	91	46	89	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.041	0.041
TW-EB-T59-001	2/14/2018	66 U	67	0.072	67	24	45	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.023	0.023
TW-EB-T60-001	2/14/2018	130 U	130 U	0.2	0.2	15	22	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.015	0.015
TW-EB-T61-001	2/14/2018	25 U	31	0.031 U	31	11	19	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.012 U	0.020 U
TW-EB-T62-001	2/14/2018	32 U	60	0.041 U	60	21	14	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.016 U	0.026 U
TW-SW-T62-001	3/26/2018	100 U	1800	0.050 U	1800	52	85	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.05	0.089	0.139
TW-EB-T63-001	2/14/2018	75 U	46	0.068	46	27	58	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.039	0.039
TW-SW-T63-001	3/26/2018	88 U	420	0.045 U	420	37	39	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.024	0.024
TW-EB-T64-001	3/27/2018	130 U	250	0.2	250	44	54	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.12	0.18	0.3
TW-SW-T64-001	3/26/2018	66 U	120	0.033 U	120	85	150	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.038	0.038
TW-SW-T64-002	3/26/2018	71 U	150	0.036 U	150	29	35	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.056	0.065	0.121
TW-EB-T65-002	3/27/2018	110 U	160	0.97	161	35	45	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.082	0.11	0.192

Table X: HPNS Parcel E-2
Tidal Wetlands Chemical Confirmation Results

Parameter		Total Petroleum Hydrocarbons				Metals		Polychlorinated Biphenyls (PCBs)							
		Diesel	Motor Oil	Gasoline	Total TPH	Copper	Lead	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCBs
Tier 2 Hot Spot Goals		Total TPH - 3500				2,700	1,970	Total PCBs - 1.8							
TW-SW-T65-001	3/26/2018	71 U	72	0.036 U	72	51	85	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.042	0.057	0.099
TW-EB-T66-001	8/24/2017	6.5 U	28 J	0.033 U	28 J	23 J	33	0.021 UJ	0.021 UJ	0.021 UJ	0.021 UJ	0.021 UJ	0.021 UJ	0.021 UJ	0.021 UJ
TW-SW-T66-001	8/24/2017	6.5 U	24 J	0.032 U	24 J	37	76	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
TW-EB-T67-001	8/24/2017	6.1 U	36	0.031 U	36	38	140	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.012 U	0.020 U
TW-SW-T67-001	8/24/2017	770 U	860 J	0.039 U	860 J	270	850	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.18	0.11	0.29
TW-EB-T68-001	8/24/2017	110 U	270 J	0.029 U	270 J	150	1700	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.012 J	0.012 J
TW-SW-T68-001	8/24/2017	6.2 U	27 J	0.031 U	27 J	21 J	38	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.046	0.046
TW-EB-T69-001	9/21/2017	36	55	0.076	91	59	350	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.012 U	0.020 U
TW-SW-T69-001	9/21/2017	17	21	0.033 U	38	30	84	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
TW-EB-T70-001	9/21/2017	9.6	12 U	0.031 U	10	15	15	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.012 U	0.020 U
TW-SW-T70-001	9/21/2017	18	24	0.033 U	42	25	67	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.013 U	0.021 U
TW-EB-T71-001 (over excavated)	9/22/2017	250	250	0.039	500	**3400**	1300	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.19	0.082	0.272
TW-EB-T71-001 (Final)	7/31/2018	--	--	--	--	120	150	--	--	--	--	--	--	--	--
TW-SW-T71-001	9/22/2017	11	13 U	0.032 U	11	8.1	15	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.013 U	0.020 U
TW-EB-T72-001	9/22/2017	740	440	0.030 U	1180	27	55	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.032	0.025	0.057
TW-SW-T72-001	9/22/2017	120	150	0.033 U	270	160	260	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.13	0.13
TW-EB-T73-001	9/22/2017	50	64	0.037 U	114	45	140	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.13	0.13
TW-SW-T73-001	9/22/2017	93	83 U	0.042 U	93	26	19	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.017 U	0.027 U
TW-EB-T74-001	2/16/2018	67 U	46	0.034 U	46	35	58	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.038	0.038
TW-SW-T74-001	3/27/2018	68 U	57	0.034 U	57	27	39	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.039	0.056	0.095
TW-EB-T75-001	2/16/2018	29 U	72	0.036	72	19	38	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.047	0.047
TW-SW-T75-001	3/27/2018	80 U	140	0.18	140	35	53	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.061	0.092	0.153
TW-EB-T76-001	2/16/2018	76 U	94	0.029	94	15	27	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.017	0.017
TW-SW-T76-001	3/27/2018	66 U	57	0.074	57	17	24	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.023	0.036	0.059
TW-EB-T77-001	2/15/2018	99 U	170	15	185	27	61	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.06	0.06
TW-SW-T77-001	3/26/2018	100 U	140	0.052 U	140	54	82	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.096	0.15	0.246
TW-SW-T77-002	3/26/2018	71 U	73	0.037	73	23	33	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.035	0.059	0.094

Notes:
TW - Tidal Wetlands Sample
EB -Excavation Bottom Confirmation Sample
SW - Excavation Sidewall Confirmation Sample
Results shown in Red indicate sample exceeded the project Action Limit, removed and additional confirmation sample collected.
U - not detected at the specified reporting limit
J - estimated concentration
Total TPH includes the total of detected TPH-Gasoline + TPH-Diesel + TPH-Motor Oil
Total PCB includes the total of detected Arochlors, for Arochlors not detected, reporting limits are not included in the Total.
mg/kg - milligrams per kilogram
-- not analyzed for this parameter